**CAM4471HEM/HEV, 3 Megapixel Real-time Outdoor Dome Network Camera**

**Architectural and Engineering Specification**

1. **General Network Camera Description**

The CAM4471HEM vandal proof camera is part of Surveon Premium Network Camera Series. The CAM4471HEM provides 2048 x 1536 resolution at 30fps (or 1920 x 1080 at 60fps), IP66-rated weatherproof housing for withstanding rain and dust, wide temperature, and IK10 vandalism design. The advanced functions include HDR (High Dynamic Range), ROI video cropping, 2D/3D noise reduction, and edge enhancement. Its built-in infrared LEDs and removable IR-cut filter allow 24/7 operations even in the low lux condition. The CAM4471HEM also comes with the 3x optical zoom autofocus lens, P-iris, Power over Ethernet, and mechanical design adapted for flexible adjustment of field of view. It is the excellent choice for high quality surveillance in the demanding outdoor applications.

* 1. **General Camera Requirements**
1. The camera shall utilize a high sensitivity 3-megapixel CMOS sensor with 1/3” optical format and shall have a removable infrared cut-off filter.
2. The camera shall output at a maximum resolution of 2048(H) x 1536(V) pixels at a maximum frame rate of 30fps.
3. The camera shall output at a maximum resolution of 1920(H) x 1080(V) pixels at a maximum frame rate of 60fps.
4. The Camera shall support HDR 100dB+ resolution of 3M @ 30FPS and HDR resolution of 2M @ 50FPS.
5. The camera shall support the auto High Dynamic Range (HDR) detection to turn on/off the HDR function automatically.
6. The camera shall support the sensor/ISP WDR (Wide Dynamic Range) for at least 100~120dB to ensure a true clear image even in a complexity lighting environment.
7. The camera shall support the Auto Wide Dynamic Range (WDR) detection to turn on/off the WDR function automatically.
8. The camera shall have a dynamic range of up to 50db at full resolution.
9. The camera shall have ICR Filter for Day/Night auto switch.
10. The camera CAM4471HEV shall have f3 – 10.5 mm varifocal lens, F1.4.
11. The camera CAM4471HEM shall have f3 – 10.5 mm auto focus lens, F1.4.
12. The camera shall have minimum illumination 0.01 Lux@F1.2 (B&W mode) and 0.1 Lux@F1.2 (color mode).
13. The camera shall Built-in IR Illuminators, Effective Up to 30 Meters.
14. The camera shall support the P-Iris control to have a better focus and image depth control manually and automatically with P-Iris intensity settings for manual adjustments and auto adjustments.
15. The camera’s shutter speed shall be 1/1 – 1/100,000s.
16. The camera shall provide wide angle of view:

Diagonal: 130° ~38°
Horizontal: 108° ~32°
Vertical: 58° ~18°

1. The camera shall provide angle adjustment:
Pan: 0°~340°
Tilt: 30°~90°
2. The camera shall have the ability to limit the maximum exposure time to avoid blurry images.
3. The camera shall have dual standard compression support with simultaneous streaming of the H.264, MJPEG, MJPEG-4 formats.
4. The camera shall support 4 Day & Night switch modes, Auto, Day, Night, and Schedule Mode.
5. The camera shall support configurable frame rates:

30 fps at QXGA (2048 x 1536)
60 fps at 1080P (1920 x 1080)
60 fps at SXGA (1280 x 1024)
60 fps at 720P (1280 x 720)
60 fps at D1 (720 x 480)
60 fps at VGA (640 x 480)
60 fps at QVGA (320 x 240)

1. The camera shall support local storage, microSD / SDHC x 1 (Max. 64G).

	1. **Camera Network Requirement**
2. The camera shall incorporate a built-in web server.
3. The camera shall support IPv4, IPv6, ARP, TCP, UDP, ICMP, SNMP, DHCP, NTP, DDNS, SMTP, FTP, HTTP, HTTPS, CIFS, PPPoE, UPnP, RTP, RTSP, RTCP, 3GPP, and ONVIF network protocols.
4. The camera shall be fully conformant with ONVIF industry-standards and pass conformance tests.
5. No unique or proprietary client software shall be required for viewing or controlling the camera.
6. The camera shall support network Auto Port Forward (NAT pass through) for the Internet connection.
7. The camera shall support Network IP Filter function (Blacklist / Whitelist Settings).
	1. **Camera Audio Requirements**
8. The camera shall support ADPCM & G.711.
9. The camera shall support 3.5mm phone jack and two way audio.
	1. **Camera Video Requirements**
10. The camera shall be able to be cropped to any resolution divisible by 2, maintain H.264 compression and comply with HDTV standard. It shall be possible to crop the camera to output a variety of lower resolution images.
11. The camera shall support multiple streams simultaneously in different resolutions, frame rates, and image qualities for viewing on different platforms, reducing file sizes and conserving valuable network bandwidth with H.264, MPEG-4 and MJPEG compatibility for versatile applications.
12. The camera shall support 64K~10Mbps (manually input supported), fixed quality (CBR), adjustable five different image quality (VBR), controller frame rate and quality.
13. The camera shall feature automatic exposure, automatic multi-matrix white balance, shutter speed control, 50/60Hz selectable flicker control, programmable brightness, saturation, gamma, sharpness, windowing and decimation, simultaneous delivery of full-field view and zoomed images at video frame rate, instantaneous electronic zoom, pan and tilt, and electronic image rotation.
14. The camera shall support various video controls, such as AGC (Auto Gain Control), AWB (Auto White Balance), AES (Auto Electronic Shutter), and image adjustment (brightness, contrast, saturation, sharpness, chroma back, etc).
15. The camera shall support Smart IR function to have a better and clear image result even on the night mode.
16. The camera shall support maximum brightness of the overall image to avoid images out of focus due to the depth of field is too short.
17. The camera shall support one push Auto Focus to fix the defocus issue. Auto focus is also supported when Zoom In/Out. (for CAM4471HEM only)
18. The camera shall incorporate necessary algorithms and circuits to detect motion in low-light with clarity.
19. The camera shall support 2D/3D Denoise and multiple modes (2D-DNR, 3D-DNR, 2D+3D-DNR), DNR level adjust, and motion adaptive.
20. The camera shall support the Auto Denoise function to smooth the static or dynamic moving parts and to ensure better images.
21. The camera shall support edge enhancement at any level and Denoise simultaneously.
22. The camera shall support two interchangeable profiles with items including iris, exposure, and shutter. The two profiles can be switched automatically by day/night to maintain quality image and cover various lighting conditions.
23. The camera shall support Region of Interest (ROI) encoding to reduce the camera bit rate. It shall support at least 8 different ROIs with different frame rates and image qualities to meet various monitored target demands.
24. The camera shall allow users to decode different frame rates from a single connection to save bandwidth.
25. The camera shall support a configurable lower frame rate and bit rate when no motion detected to reduce the bandwidth for network and storage. And when there is a motion triggered, the camera can switch to the standard frame rate and bit rate within 1 sec.
26. The camera shall support motion detection with 3 zones, each with different detecting rules and sensitivities.
27. The camera shall support tampering detections (blocked, redirected, defocused, or spray-painted), 5 levels of detecting sensitivities.
28. The camera shall have privacy masking, the ability to select multiple regions of an arbitrary shape to block the video.
29. The camera shall support failover recording. When IPCAM and NVR got disconnected, record images to microSD / SDHC. Once connected, send back the recorded images to appointed NVR or FTP Site. Bandwidth of files sending can be set.
30. The camera shall support various event notifications, including snapshot, video clip by FTP, email, record to NAS, record to local storage, and trigger DO.
31. The camera shall support sending snapshots or video clips to iSCSI Storage when an alarm triggered.

	1. **Connector Specifications**
32. The camera shall support 1 alarm in & 1 alarm out, and terminal block.
33. The camera shall support external I/O devices to be connected with the camera triggering functionalities.
34. The camera shall support RJ45, 10/100 Base-T/RJ45 Ethernet connector.
	1. **Electrical Specifications**
35. The camera’s power source shall be 12V DC, 1.5A.
36. The camera’s power source shall support Power over Ethernet (PoE) complying with the IEEE 802.3af standard.
	1. **Mechanical Specifications**
37. The camera shall have installed dimensions (DxH) of Ø144mm x 116mm (Ø5.67” x 4.57”).
38. The camera shall weigh 1260g (2.78lb).
	1. **Environmental Specifications**
39. The camera’s operating ambient temperature is -40˚C ~ 50ºC (-40 °F ~ 122ºF) and storage temperature is -30˚C ~ 60ºC (-22°F ~ 140ºF).
40. The camera’s operating humidity is 5%~90%.
	1. **Certifications and Approvals**
41. The camera shall be compliant with LVD, FCC, CE, IP66 and IK10.
	1. **Warranty**
42. Surveon offers a three-year hardware and software warranty service and replacement parts free of charge during the warranty period, depending on requirements to extend the warranty period.

*Surveon reserves the right to change products or specifications without notice.*