**CAM2331, 2Megapixel Real Time WDR Day&Night Network Camera**

**Architectural and Engineering Specification**

1. **General Network Camera Description**

Surveon CAM2331/CAM2331P is a 2 megapixel network camera with SONY Exmor sensor and DC-Iris control for SMB and enterprise users. With 2 megapixel SONY Exmor CMOS sensor and advanced ISP function, CAM2331/CAM2331P has a superior performance with enhanced image quality. It is an ideal solution for all applications, such as stadiums, airports, shopping malls, and banks, the megapixel range will extend your capability to protect the building, the people, and your business.

* 1. **General Camera Requirements**

1. The camera shall utilize a high sensitivity 2-megapixel SONY CMOS sensor with 1/2.8” optical format and shall have a removable infrared cut-off filter.
2. The camera shall output at a maximum resolution of 1920(H) x 1080(V) pixels at a maximum frame rate of 30fps.
3. The camera shall support the sensor/ISP WDR (Wide Dynamic Range) for at least 70dB to ensure a true clear image even in a complexity lighting environment.
4. The camera shall have ICR Filter for Day/Night auto switch.
5. The camera CAM2331 shall have changeable lens (CS/C mount).
6. The camera CAM2331P shall have 3 – 8 mm P-Iris lens, F1.2 (CS mount).
7. The camera shall have 2 sets of Day/Night settings; one is auto switch by its sensor and the other is by its light sensor.
8. The camera shall have an integrated changeable CS/C mount, megapixel, IR corrected, minimum illumination 0.005 [Lux@F1.2](mailto:Lux@F1.2) (B&W mode) and 0.05 [Lux@F1.2](mailto:Lux@F1.2) (color mode).
9. The camera CAM2331 shall have DC iris control and support auto mode and fixed iris mode to have a better image illuminant management.
10. The camera CAM2331P shall have P-iris control and support auto mode and manual iris mode to have a better image illuminant management.
11. The camera’s shutter speed shall be 1/30 – 1/50,000,000s.
12. The camera CAM2331 shall provide wide angle of view:

None

1. The camera CAM2331P shall provide wide angle of view:

Diagonal: 123.1°~48.3°  
Horizontal: 105.4°~42.2°  
Vertical: 57.9°~23.8°

1. The camera shall have the ability to limit the maximum exposure time to avoid blurry images.
2. The camera shall support shutter speed level at x2, x4 (slow shutters at 1@2sec. and 1@4sec), to produce clear image even in a very low lux environment.
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 configurable frame rates:

30 fps at 1080P (1920 x 1080)  
30 fps at SXGA (1280 x 1024)  
30 fps at HD720 (1280 x 720)  
30 fps at D1 (720 x 480)  
30 fps at VGA (640 x 480)  
30 fps at QVGA (320 x 240)

1. The camera shall support local storage, microSD / SDHC x 1 (Max. 32G).  
   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.
   1. **Camera Audio Requirements**
6. The camera shall support ADPCM & G.711.
7. The camera shall support 3.5mm phone jack and two way audio.
   1. **Camera Video Requirements**
8. The camera shall be able to be cropped to any resolution divisible by 2 and maintain H.264 compression. It shall be possible to crop the camera to output a variety of lower resolution images.
9. 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.
10. The camera shall support 64K~10Mbps (manually input supported), fixed quality (CBR), adjustable five different image quality (VBR), controller frame rate and quality.
11. 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.
12. 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).
13. The camera shall have the ability to set up a target reference luminance to dynamically control the ISP functions for shutter, AGC and Iris.
14. 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.
15. The camera shall incorporate necessary algorithms and circuits to detect motion in low-light with clarity.
16. The camera shall support two interchangeable profiles with items including iris, exposure, and shuttle. The two profiles can be switched automatically by day/night to maintain quality image and cover various lighting conditions.
17. The camera shall allow users to decode different frame rates from a single connection to save bandwidth.
18. 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.
19. The camera shall support motion detection with 3 zones, each with different detecting rules and sensitivities.
20. The camera shall support tampering detections (blocked, redirected, defocused, or spray-painted), 5 levels of detecting sensitivities.
21. The camera shall have privacy masking, the ability to select multiple regions of an arbitrary shape to block the video.
22. 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.
23. The camera shall support various event notifications, including snapshot, video clip by FTP, email, record to NAS, record to local storage, and trigger DO.
24. The camera shall support sending snapshots or video clips to iSCSI Storage when an alarm triggered.  
    1. **Connector Specifications**
25. The camera shall support BNC out, and NTSC/PAL Switch.
26. The camera shall support RS-485 (2 pin on terminal block), and Pelco P/D Protocol.
27. The camera shall support 1 alarm in & 1 alarm out, and terminal block.
28. The camera shall support external I/O devices to be connected with the camera triggering functionalities.
29. The camera shall support RJ45, 10/100 Base-T Ethernet connector.
    1. **Electrical Specifications**
30. The camera’s power source shall be 12V DC, 1.5A.
31. The camera’s power source shall support Power over Ethernet (PoE) complying with the IEEE 802.3af standard.
    1. **Mechanical Specifications**
32. The camera shall utilize a built-in C/CS mount adjustment ring.
33. The camera shall have installed dimensions (WxHxD) of 74.95mm x 59.3mm x 153.5mm (2.95" x 2.34" x 6.04").
34. The camera shall weigh 435g (0.96lb).
    1. **Environmental Specifications**
35. The camera’s operating ambient temperature is -10˚C ~ 50ºC (14 °F ~ 122ºF) and storage temperature is -30˚C ~ 60ºC (-22°F ~ 140ºF).
36. The camera’s operating humidity is 5%~90%.
    1. **Certifications and Approvals**
37. The camera shall be compliant with safety LVD, and EMC: FCC, GOST, and CE.
    1. **Warranty**
38. 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.*