**CAM3351R3, WDR Outdoor Bullet Network Camera**

**Architectural and Engineering Specification**

1. **General Network Camera Description**

The CAM3351R3 WDR outdoor camera is part of Surveon Professional Network Camera Series. Equipped with the SONY Exmor sensor, the CAM3351R3 provides 1920 x 1080 (1080P) resolution at 30fps and IP66-rated weatherproof housing for withstanding rain and dust. The advanced functions include WDR, 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 compact size makes it the ideal choice for megapixel surveillance in the outdoor applications.

* 1. **General Camera Requirements**

1. The camera shall utilize a high sensitivity 2-megapixel SONY Exmor 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) pixel at a maximum frame rate of 30 FPS to get the real time video from the sensor.
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 support the auto Wide Dynamic Range (WDR) detection to turn on/off the WDR function automatically.
5. The camera shall have a dynamic range of up to 48db at full resolution.
6. The camera shall have ICR Filter for Day/Night auto switch.
7. The camera shall have f3.6 mm lens, F1.8.
8. The camera shall have minimum illumination 0.01 [Lux@F1.](mailto:Lux@F1.2)4 (B&W mode) and 0.1 [Lux@F1.](mailto:Lux@F1.2)4 (color mode).
9. The camera shall Built-in IR Illuminators, Effective Up to 20 Meters.
10. The camera shall support Smart IR function to get a better and clear image under night mode.
11. The camera’s shutter speed shall be 1/1 – 1/100,000s.
12. The camera shall provide wide angle of view:

Diagonal: 92°

Horizontal: 79°

Vertical: 49°

1. The camera shall have the ability to limit the maximum exposure time to avoid blurry images.
2. The camera shall have dual standard compression support with simultaneous streaming of the H.264, MJPEG, MJPEG-4 formats.
3. The camera shall be able to provide the H.264 high profile to reduce bandwidth and comply with HDTV standard.
4. The camera shall support H.264 SVC-T, dynamic controller frame rate.
5. The camera shall support 4 Day & Night switch modes, Auto, Day, Night, and Schedule Mode.
6. The camera shall support configurable frame rates:

30 fps at 1080P (1920 x 1080)  
30 fps at SXGA (1280 x 1024)  
30 fps at 720P (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. 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.  
   1. **Camera Video Requirements**
6. 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.
7. 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.
8. The camera shall support 64K~10Mbps (manually input supported), fixed quality (CBR), adjustable five different image quality (VBR), controller frame rate and quality.
9. 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.
10. The camera shall support various video controls, such as AGC (Auto Gain Control), AWB (Auto White Balance), AES (Auto Electronic Shutter), Luminance Control, WDR, 2D/3D De-noise, ROI, Edge Enhancement, Lens Correction, image adjustments (brightness, contrast, saturation, sharpness, chroma back, etc).
11. The camera shall have the ability to set up a target reference luminance to dynamically control the ISP functions for shutter, AGC and Iris.
12. The camera shall support the Auto Denoise function to smooth the static or dynamic moving parts and to ensure better images.
13. The camera shall support different mode of denoise functions including 2D-DNR, 3D-DNR and the 2D+3D-DNR combination DNR to smooth the static or dynamic moving targets. The DNR needs to support level adjust and also the Motion Adaptive to reduce the image dragging from the standard 3DNR.
14. The camera shall support edge enhancement at any level, and to set the edge enhancement and denoise level settings simultaneously.
15. The camera should support inward and outward of lens correction to avoid the distorted image from the lens. There are two levels of corrections.
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 incorporate necessary algorithms and circuits to detect motion in low-light with clarity.
18. 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.
19. The camera shall support Region of Interest encoding to reduce the cameras bit rate. It supports at least 8 different ROI regions with different frame rates and image qualities to fit various monitoring target adjustments.
20. The camera shall allow users to decode different frame rates from a single connection to save bandwidth.
21. 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.
22. The camera shall support motion detection with 3 zones, each with different detecting rules and sensitivities.
23. The camera shall support tampering detections (blocked, redirected, defocused, or spray-painted), 5 levels of detecting sensitivities.
24. The camera shall have privacy masking, the ability to select multiple regions of an arbitrary shape to block the video.
25. 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.
26. The camera shall support various event notifications, including snapshot, video clip by FTP, email, record to NAS, record to local storage, and trigger DO.
27. The camera shall support sending snapshots or video clips to iSCSI Storage when an alarm triggered.  
    1. **Connector Specifications**
28. The camera shall support RJ45, 10/100 Base-T Ethernet connector.
    1. **Electrical Specifications**
29. The camera’s power source shall be 12V DC, 1.5A.
30. The camera’s power source shall support Power over Ethernet (PoE) complying with the IEEE 802.3af standard.
    1. **Mechanical Specifications**
31. The camera shall have installed Length: 165mm, Diameter: 75mm.
32. The camera shall weigh 600g net and 800g with bracket.
    1. **Environmental Specifications**
33. The camera’s operating ambient temperature is -10˚C ~ 50ºC (-14 °F ~ 122ºF).
34. The camera’s operating humidity is 5%~90%.
    1. **Certifications and Approvals**
35. The camera shall be compliant with safety LVD, FCC, CE and IP66.
    1. **Warranty**
36. 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.*