Oncam is a global technology company that delivers effective and intelligent video and video-based analytic and business intelligence solutions for our global customers. As a pioneer of 360-degree video technology and with over 10 years' experience, Oncam understands the need to intelligently integrate the business process with technology to create modern, scalable solutions. Oncam is part of Oncam Technologies and operates in multiple sectors across a diverse range of countries.

For additional information, contact:

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360° 12 MEGAPIXEL OUTDOOR VIDEO CAMERA

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

Notes to Specifier

1. Where several alternative parameters or specifications exist, or where the specifier has the option of inserting text, such choices are presented in **<bold text>. The normal default is presented in [bracketed bold text].**

2. Explanatory notes and comments are presented in **colored** text.

Important Note to Security Systems Specifiers

CSI MasterFormat 2016 incorporates numerous significant changes affecting electronic safety and security since MasterFormat 2014. This document is written to provide flexibility in using either format, although adoption of MasterFormat 2016 is encouraged. The following is a guide to the MasterFormat numbers relevant to the product referenced in this specification.

Primary Specification Area

MasterFormat 2014:

28 20 00	Electronic Surveillance
28 23 00	Video Surveillance
28 23 29	Video Surveillance Remote Devices and Sensors

MasterFormat 2016:

28 20 00	Video Surveillance
28 21 00	Surveillance Cameras
28 21 13	IP Cameras
28 21 13.11	Panoramic IP Cameras

Related Requirements

MasterFormat 2014:

27 20 00	Data Communications
28 23 13	Video Surveillance Control and Management Systems
28 23 16	Video Surveillance Monitoring and Supervisory Interfaces
28 23 19	Digital Video Recorders and Analog Recording Devices
28 23 23	Video Surveillance Systems Infrastructure

MasterFormat 2016

27 15 01.13	Video Surveillance Communications Conductors and Cables
27 20 00	Data Communications
28 05 07.21	PoE Power Sources for Electronic Safety and Security
28 05 11	Cyber Requirements for Electronic Safety and Security
28 05 19	Storage Appliances for Electronic Safety and Security
28 05 19.15	Network Video Recorders
28 05 33	Safety and Security Network Communications Equipment
28 23 00	Video Management System

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360º 12 MEGAPIXEL OUTDOOR VIDEO CAMERA

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PART 1   GENERAL

1.01   SUMMARY

A. Section includes a 12 megapixel (MP) IP outdoor video camera providing 360 degree surveillance.

B. Product - A low profile 12 MP outdoor IP66, IP67 and IK10 rated video camera. Employs one 4072H x 3046V image sensor, capable of providing 360 degree surveillance with no moving parts and seven independent video streams.

C. Related Requirements

Refer to MasterFormat notes at the beginning of this document to select requirements specific to the MasterFormat version being used in the specification.

1.02   REFERENCES

A. Abbreviations

1. API – Application Programming Interface

2. ARP – Address Resolution Protocol

3. AWB - Automatic White Balance

4. DHCP - Dynamic Host Configuration Protocol

5. DNS - Domain Name Server

6. fps - frames per second

7. FTP - File Transfer Protocol

8. GOP – Group of Pictures

9. GUI – Graphical User Interface

10. HTTP - Hypertext Transfer Protocol

11. HTTPS – Secure Hypertext Transfer Protocol

12. ICMP – Internet Control Message Protocol

13. IGMP - Internet Group Management Protocol

14. IP - Internet Protocol

15. JPEG - Joint Photographic Experts Group

16. MJPEG - Motion JPEG

17. MP - Megapixel

18. MPEG - Moving Pictures Experts Group

19. NTP - Network Time Protocol

20. PoE - Power over Ethernet

21. RTP - Real-Time Transport Protocol

22. RTSP - Real-Time Streaming Protocol

23. SDK - Software Development Kit

24. SMTP - Simple Mail Transfer Protocol

25. TCP - Transmission Control Protocol

26. UDP - User Datagram Protocol

27. UPnP - Universal Plug and Play

28. VCam – Virtual Camera

29. VMS - Video Management System

30. WDR – Wide Dynamic Range

B. Reference Standards

1. Network

a. IEEE 802.3 Ethernet Standards

b. IEEE 802.1x – Port-based authentication

2. Video

a. ISO / IEC 14496 –10, MPEG-4 Part 10 (ITU H.264)

b. ISO / IEC 10918 – JPEG

c. ONVIF – Profile S

3. Emissions

a. FCC-47 CFR Part 15 Subpart B, Class A

b. ANSI C63.4-2014

c. CE

1.) EN 55032:2015/AC:2016-07, AS/NZS CISPR 32:2015/COR1:2016, Class A Conducted and Radiated Power

2.) EN 61000-3-2:2014 Harmonic Current Emissions

3.) EN 61000-3-3:2013 Voltage Fluctuations and Flicker

d. ICES-003, Issue 6-2016

e. EN 55024 2010+A1:2015 & CISPR 24:2010

4. Environmental

a. BS EN 60529 – Degrees of Protection Provided by Enclosures – IP66 / IP67

b. National Electrical Manufacturers Association

c. BS EN 62262 Impact Rating - IK10

5. Safety

a. Underwriters Laboratories (UL) and cUL 60950 – Information Technology Equipment

C. Definitions

1. Dewarping – A process in which an image or set of images is rendered in a flat plane with spatial distortions corrected by a curvilinear type algorithm to create a normal appearance.

2. Virtual Camera (VCam) – An image stream which is the result of taking a selected portion of a camera's field of view and presenting it as if it were a single camera dedicated to that view.

1.03 SUBMITTALS

A. Product Data

1. Manufacturer's printed or electronic data sheets

2. Manufacturer's installation and operation manuals

3. Warranty documentation

1.04 QUALIFICATIONS

A. Manufacturer shall have a minimum of five years' experience in producing IP video equipment.

B. Installers shall be trained and authorized by the Manufacturer to install, integrate, test, and commission the system.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver the camera in the manufacturer's original, unopened, undamaged container with identification labels intact.

B. Store the camera in a temperature controlled environment protected from mechanical and environmental conditions as designated by the manufacturer.

1.06 WARRANTY AND SUPPORT

A. Manufacturer shall provide a limited 3 year warranty for the product to be free of defects in material and workmanship.

END OF SECTION

PART 2   PRODUCTS

2.01 EQUIPMENT

A. Manufacturer: Oncam Global Ltd.

Building 4, Chiswick Park

566 Chiswick High Road

London, W4 5YE

United Kingdom

Phone: + 44 (0) 20 7371 6640

Web: www.oncamgrandeye.com

E-mail: support@oncamgrandeye.com

B. Model   EVO-12-NMD (White)

C. Alternates: None

2.02 GENERAL DESCRIPTION

A. The 360º 12 MP outdoor video camera ("360 degree camera") shall have no moving parts and be capable of providing 360 degree surveillance with no blind spots.

B. The 360 degree camera shall possess the following primary characteristics:

1. employ a single image sensor capable of providing 4072H x 3046V resolution

2. provide dewarping software to convert the spherical video image into a continuous flat view

3. H.264 and MJPEG compression

4. 12 fps for maximum resolution, 30 fps for 2 MP resolution and below

5. unicast support for up to 20 simultaneous users depending on the resolution settings

6. multicast supported for all H.264 camera streams

7. 0.1 lux minimum illumination, providing clarity in low light

8. local 3D dewarping providing 4x VCams at max 1MP each

9. 10x zoom with Oncam 3D client-side dewarping software

10. 10 configurable privacy regions

11. 8 polygonal Video Motion Detection regions

12. local alarm digital input and output

13. audio microphone input

14. built-in SD Card slot. Supports cards up to 128 GB capacity. Speed class 10 or higher required

15. image snapshot transferred by email

16. operate on an embedded Linux platform

17. include a built-in web server

18. PoE (IEEE standard 802.af) or 12VDC powered

19. IP66, IP67 and IK10 rated

2.03   VIDEO

A. Imager

1. Sensor: 12.4 MP (approximately) 1/2.3" Sony EXMOR R CMOS Sensor

2. Minimum illumination: 0.10 lux (50 IRE, F/2.0)

3. Scanning: Progressive

B. Image Control Settings

1. Automatic white balance (AWB):   2,500K to 8,000K (approximately)

2. Privacy zone definition: 10 configurable zones

3. Wide Dynamic Range (WDR):   Electronic WDR 60 dB

4. Brightness

5. Sharpness

6. Contrast

7. Saturation

8. Exposure compensation

9. Compression – image quality   Multi-levels of compression and frame rate adjustment

C. Lens: 185º fixed, F/2.0

1. Angle of view: 180º horizontal, 180º vertical (hemispherical)

D. Video Streams

1. The 360 degree camera shall support the transmission of seven configurable video streams, whose properties are detailed in Attachment A.

2. Available compression types:

a. H.264, available in 6 streams

b. MJPEG, available in 1 stream

c. Available resolutions:

1.) H.264 compression

a.) 3200 x 3000 (9.6 MP)

b.) 2528 x 2376 (6 MP)

        c.) 2080 x 1960 (4 MP)

        d.) 1472 x 1384 (2 MP)

        e.) 544 x 512 (1/4 MP)

    2.) MJPEG compression

        a.) 544 x 512 (1/4 MP)

3. Bit rate

    a. Range: 0.8 Mbps – 10 Mbps (Constant Bit Rate)

    b. H.264 options:

        1.) Constant Bit Rate

        2.) Fixed Quality

        3.) GOP length

        4.) Maximum frames per second

    c. MJPEG options:

        1.) maximum frames per second

        2.) quality

4. Frame rate: 0-30 fps

5. Presentation: Video views shall be available in both fisheye and dewarped (flat) views as follows:

    a. Fisheye views: 3 streams, one of which shall be MJPEG

    b. Dewarped views: 4 streams of independent VCams

6. Video streams shall support ONVIF profile S.

E. Video Viewing

1. Video and snapshots shall be capable of being accessed through the following means:

    a. JPEG images accessible through a web browser

    b. Video streaming through an available media player

    c. ONVIF driver

F. Storage and Recording

1. The 360 degree camera shall have the facility for onboard SD card storage.

2. Compatible with ONVIF Profile G (Recording)

G. Video Motion

1. Video motion analytics shall be pre-loaded in the 360 degree camera.

2. The 360 degree camera shall have the ability to detect motion within up to 8 user defined areas of the video image.

H. Pan Tilt Zoom (PTZ) Functionality - The 360 degree camera shall support 10x digital zoom with Oncam 3D client side dewarping software.

2.04   ADDITIONAL FEATURES

A. Alarm – The 360 degree camera shall have a contact input and contact output for alarm or control.

B. Event management – The 360 degree camera shall perform selected response actions when triggered by selected inputs as follows:

1. Response actions:

       a. contact output

       b. e-mail via SMTP

       c. local recording

    2. Trigger inputs:

       a. motion in a pre-defined area

       b. contact input

       c. HTTP event

       d. network connection lost

C. Audio – The 360 degree camera shall have audio capability.

    1. Input options:

       a. Line level/external microphone input (3.5 mm jack), ; 600-ohm differential, 1 V p-p maximum

    2. Streaming Options

       a. via RTSP using G.711 codec

       b. via ONVIF Profile S

D. Integrations – The 360 degree camera shall have available an API and an SDK to support integrations with third party manufacturers, including VMS and network storage providers.

2.05 NETWORK

A. Connectivity: 1000BASE-TX Ethernet with RJ-45 connector

B. Protocols supported

    1. Transmission Control Protocol (TCP), Internet Protocol (IP) v4, User Datagram Protocol (UDP)

    2. Configuration: Dynamic Host Configuration Protocol (DHCP)

    3. Web services: Hypertext Transfer Protocol (HTTP)

    4. Network services: Domain Name System (DNS), Network Time Protocol (NTP), Internet Control Message Protocol (ICMP), Universal Plug and Play (UPnP), Simple Network Management Protocol v2 or v3 (SNMP)

    5. Media: Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP)

    6. Multicast: Internet Group Management Protocol (IGMP)

    7. Simple Mail Transfer Protocol (SMTP)

C. Unicast - The 360 degree camera shall support 20 simultaneous users of independent streams.

D. Multicast - The 360 degree camera shall support multicast for all H.264 camera streams.

E. Security

    1. The 360 degree camera shall have a user configurable password feature.

    2. IEEE 802.1x Authentication

2.06 CAMERA SOFTWARE

A. Web Server - The 360 degree camera shall have a built in web server which supports browser-based configuration of the camera.

    1. The camera's web server shall allow access to camera information and all primary software functions to include:

       a. Image settings

       b.   Network settings

       c.   Alarm settings, triggers, and actions

          1.) Triggers:

             a.) motion

             b.) network connection lost

             c.) contact input

             d.) HTTP Event

          2.) Actions:

             a.) Email (SMTP)

             b.) Records to SD card

             c.) Contact Output

       d.   Camera settings

          1.) Frames per second

          2.) Quality

          3.) Bit rate control

          4.) Compression settings

       e.   Clock settings

       f.   Video stream settings

          1.) Resolution

          2.) Compression

       g.   SD card recording settings

       h.   Maintenance

          1.) Factory reset

          2.) Reboot camera

       i.   Image regions

          1.) Privacy zones

          2.) Motion detection zones

   2.   The camera's web server shall support up to 20 clients simultaneously over the network.

 B.   Setup and Maintenance - The Manufacturer shall offer a setup and maintenance software tool to implement the following actions:

   1.   Scan local network to discover compatible cameras

   2.   Remotely change and configure camera settings, including network settings

   3.   Remotely import or export network settings

   4.   Upgrade camera firmware

   5.   Remotely send commands to camera

   6.   Send configuration settings to multiple cameras

C. Diagnostics

1. The 360 degree camera shall have a self-monitoring function which automatically resets the camera in the event of malfunction.

2. The 360 degree camera shall have a diagnostics tool to test hardware functionality, accumulate statistics, and diagnose hardware faults.

3. The 360 degree camera's SD card shall allow the creation and storage of a boot-up function for diagnostics and fault finding.

2.07   ELECTRICAL

A. Power

1. Source Options

    a. 12 VDC

    b. PoE (IEEE standard 802.3af) – 48 VDC nominal

2. Power Consumption (maximum):

    a. 12 VDC: 7.32 W

    b. POE: 8.4 W

B. Connectors:

1. Ethernet: RJ-45 connector

2. External power (12 VDC):   2.1 mm input jack

3. External input/output: 6-pin 1.5 mm Phoenix style connector

4. Analog video: BNC test port for production, not available for normal operation

2.08   MECHANICAL AND ENVIRONMENTAL

A. Housing Material: aluminum with polymer bubble

B. Dimensions: 7.0" L x 6.4" W x 4.3" H (178 mm x 162 mm x 108 mm)

C. Temperature

1. Operating: -40° C to 55° C (-40° F to 131° F)

2. Storage: -40° C to 70° C (-40° F to 158° F)

D. Environmental Rating: IP66 , IP67

E. Impact Rating: IK10

2.09   ACCESSORIES

A. The Manufacturer shall offer accessories to enable the following types of mounting:

1. Pendant

2. Pole

3. Wall

4. Corner

END OF SECTION

PART 3   EXECUTION

3.01   INSTALLERS

A.   Contractor personnel shall comply with all applicable state and local licensing requirements.

3.02   PREPARATION

A.   The network design and configuration shall be verified for compatibility and performance with the camera(s).

B.   Network configuration shall be tested and qualified by the Contractor prior to camera installation.

C.   Before permanent installation of the system, the Contractor shall test the system in conditions simulating the final installed environment

1.   A report indicating successful test results shall be produced.

3.03   INSTALLATION

A.   Contractor personnel shall follow all Manufacturer published installation instructions and guidelines.

B.   The 360 degree camera shall not be deployed in air handling spaces.

C.   Contractor shall insure that the installed cameras contain the latest revision of Manufacturer's firmware.

3.04   STORAGE

A.   The 360 degree camera hardware shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

3.05   ATTACHMENTS

A.   Video Stream Properties

END OF SECTION

Attachment A

Video Stream Properties

Video	
Video Stream 1 Codec	H.264 in 9.6 MP, 6 MP, 4 MP, 2 MP
Video Stream 1 Compression Level	Multi-levels of compression and frame rate adjustment
Video Stream 1 Pixel Resolution	Fisheyes at: 9.6 MP (3200 x 3000), 6 MP (2528 x 2376), 4 MP (2080 x 1960), 2 MP (1472 x 1384)
Video Stream 2 Codec	H.264 ¼ MP
Video Stream 2 Compression Level	Multi-levels of compression and frame rate adjustment
Video Stream 2 Pixel Resolution	Fisheye at ¼ MP (544 x 512)
Video Stream 3 Codec	MJPEG in ¼ MP
Video Stream 3 Compression Level	Multi-levels of compression and frame rate adjustment
Video Stream 3 Pixel Resolution	Fisheye at ¼ MP (544 x 512)
* VCam Stream 4, 5, 6, 7 Codec	H.264
* VCam Stream 4, 5, 6, 7 Compression Level	Multi-levels of compression and frame rate adjustment
* VCam Stream 4, 5, 6, 7 Pixel Resolution	4x independent onboard dewarped VCams at 1 MP (1280 x 720), ¼ MP (640 x 480)
Maximum Frame Rate	30 fps (CGI)
Image Control	Settings: brightness / contrast / saturation / exposure compensation, compression quality and wall / ceiling / table mount
Image Enhancement	Electronic WDR 60dB
PTZ Functionality	10x zoom with Oncam 3D client-side dewarping software
VMS / NVR Support	Contact Oncam Sales for the supported VMS / NVR list
Web Browser Compatibility	Internet Explorer 9, Edge 25, Firefox 23 and Chrome 29 or above. Plug-in required for full functionality
Unicast	Up to 20 simultaneous users depending on the resolution settings
Multicast	Supported for all H.264 camera streams
Bit Rate Control	Options include Constant Bit Rate Control and Constant Quality Control

* Video Stream 2 and VCams cannot be used