

Evolution 12

360-degree Camera Series

This document describes the enhancements and major fixes for 360-degree Evolution 12 series camera firmware. Review each section to determine if an upgrade is warranted for your installation.

For additional information on the unit (including the latest updates to documentation, product specifications, and software downloads), visit the Oncam web site at: www.oncamgrandeye.com

NOTICE: Verify compatibility with any required VMS versions before upgrading your firmware in a live site.

ATTENTION: CAMERAS WITH ORIGINAL v1.0.45 FIRMWARE MUST FIRST BE UPGRADED TO v1.1.49 BEFORE UPGRADING TO LATER VERSIONS
Firmware v1.1.49 is included in the v1.5.1-682 download package to facilitate this essential initial upgrade.
Failure to upgrade v1.0.45 to v1.1.49 first may make the camera unresponsive and require RMA.

NOTICE: Upgrading from 1.1 to 1.3 or above can change system functionality.

- **ALL CAMERA SETTINGS INCLUDING IP SETTINGS WILL BE RESET TO FACTORY DEFAULTS UPON UPGRADE**
- When upgrading the camera over a routed connection, it will become unreachable outside the local subnet if there is no DHCP server to reapply the previous settings.
- When factory default settings are applied, the whole scene is used for motion detection until explicit regions are defined.

NOTICE: Downgrading from 1.3 and above to 1.1 and below requires a factory reset that includes resetting all the camera's network settings.

- When downgrading the camera over a routed connection, it will become unreachable outside the local subnet if there is no DHCP server to reapply the previous settings.

SUPPORT

For technical issues, contact Oncam Technical Support at:

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Visit support.oncamgrandeye.com for the latest FAQs and Downloads, and how to upgrade camera firmware.

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This maintenance release (build 2.3.2-890) is a General release for all Evolution 12 360-degree 12MP cameras.

This firmware has been tested to be Profile S and Profile G conformant with the ONVIF Device Test Tool v22.12rev.28

Enhancements

User management page improvement

Added new access levels to the user management page to give customers better control of users and authentication access to the camera webpage and settings. Admin, User, and Operator access levels now available.

Multicast UI improvement

The UI for multicast streaming has been updated to include a status indicator, to serve as visual confirmation of the streaming status of the camera.

Fixes

Dialog messages

Dialog warning during a network reset now displayed before reset occurs. Ref: 2149

After a camera or user credential is reset, camera UI no longer asks for user credentials but rather correctly displays the new user creation page. Ref: 2177

Empty alert box occasionally displayed on the network settings page now displays message correctly. Ref: 1813

Multicast

VMS specific issue where camera started multicasting after being commissioned is now fixed. Ref 2631

VMS specific issue where dropout occurred when multicast is disabled is now fixed. Ref 2164

VMS specific issue where multicast address could not be modified is now fixed. Ref 2226

Issue where the multicast default address was not updated after changing to DHCP is now resolved. Ref 2260

Issue where other settings changes could not be set after changing the Multicast RTSP port is now fixed. Ref 2053, 1815

User name and password

When setting the user password, the “&” special character is now supported. Ref. 2152

Issue where users' name where limited to less than 32 characters is now fixed. Ref. 2182, 2183, 2184

Playing video from SD card fails in Mobile Apps

Playing profile G recorded video from the app now fixed. Ref 2052

Motion Detection

VMS specific issue -where motion detection could not be detection now fixed. Ref 2443

Motion Events causing internal memory leak issue has now been fixed. Ref.2441

RTSP command handling

VMS specific issue relating to closing client connection sockets after RTSP TEARDOWN command now fixed. Ref. 2266, 2153

Streaming Stability Improvements

Improved camera performance to changing light level when in Fixed Quality mode. Ref. 2199

Camera Web UI

The multicast streaming ON/OFF indicator now reflects the correct status of the camera stream status when a client decommissions it when it set to be multicasting. Ref 2633

Known Issues

SD card

Issue with specific a SD card brand, Gigastone, where the card cannot be mounted and formatted by the camera. Ref 2151

VMS specific issue where the audio from a downloaded recordings is not in sync with video. Ref 2123

Audio settings

Changing the audio settings requires camera to be rebooted for settings to be applied. Ref 2074

LIMITATIONS

2nd fisheye resolution limited to ¼ MP

The second fisheye stream has been restricted to ¼ MP to allow for a more advanced motion detection algorithm.

This major release (build 855) applies to all Evolution 12 360-degree 12MP cameras.

This firmware has been tested to be Profile S and Profile G conformant with the ONVIF Device Test Tool v20.06 rev.6086

Enhancements

SNMP

Simple Network Management Protocol (SNMP) is an application-layer protocol used to manage and monitor network devices and their functions. SNMP version 2 and version 3 have been integrated into the EVO-12 camera range.

802.1x/EAP

802.1x authentication standard is used for passing Extensible Authentication Protocol (EAP) over Local Area Networks (LAN). It provides an encrypted EAP tunnel that prevents outside users from intercepting information. The EVO-12 camera supports the MD5, TLS and PEAP authentication types.

First time access – Password and Username Setting

To connect to the camera for the first time, a Username and Password will need to be set for the Primary Administrator. For enhanced security, default usernames and passwords are not supported.

Notifications

Improvements have been made to system notifications involving the SD card.

Fixes

Multicast

Automatic Multicast address creation is now based on the primary IP address, with 239 replacing the first three digits of the IP address. Ref 1848

SD Card

Unmounting SD card no longer fails during event or recording searches. Ref: 2143

Streaming Stability Improvements

Resolves an issue with EVO-12 streaming stability on a very busy network.

- RTSP over TCP streaming retries increased before disconnecting.
- Increased TCP send buffer size to allow for heavily loaded network that are slow to acknowledge.
- WebRequest timeout value increased for heavily loaded networks that are slow to

acknowledge. Ref: 2133

Using Fixed Quality at 70%

Under certain lighting conditions, the EVO-12 camera will stop streaming when the fixed quality is configured to 70%. It is recommended to configure the fixed quality to a value less than 70% to avoid extremely high bit rates in extreme lighting conditions. The default value is now set to 60%. Ref 2116

Streaming to Mobile Apps

Live video streams can now be viewed in the Oncam Android or IOS mobile apps. Ref: 2052

Known Issues

Network dialog warning message

The Network dialog warning during the network reset process is displayed after reboot. Ref: 2149

Network Settings empty alert

On the network settings page, sometimes an empty alert box is displayed. Ref: 1813

Special Character support

When setting the user password, the "&" special character is not supported. Ref. 2152

Unable to set static IP address after changing Multicast RTSP port

After pressing Apply Settings button, the camera will not reboot so the new setting won't be applied. The workaround is to set the static address first and then change the Multicast RTSP port. Ref 2053

Playing video from SD card fails in Mobile Apps

The list of recorded video clips from the SD card is displayed in the Android and IOS mobile Apps but cannot be played in the app. Ref 2052

2nd fisheye resolution limited to ¼ MP

The second fisheye stream has been restricted to ¼ MP to allow for a more advanced motion detection algorithm.

2.0.1-825 Release

(June 2020)

This major release (build 825) applies to all Evolution 12 360-degree 12MP cameras.

This firmware has been tested to be Profile S and Profile G conformant with the ONVIF Device Test Tool v19.12

Enhancements

ONVIF Profile G support

Compliance with the ONVIF Profile G specification for recording video and audio data to the local SD card. Ref 1733

For information on VMS compatibility and Profile G test results, please contact Oncam support (support@oncamgrandeye.com)

Multicast Support

Compliance with the ONVIF Profile S specification for Multicast support. Ref 1804

Fixes

Hardware Input Trigger only creates one recording

Resolve an issue when the onboard I/O is triggered and remains active, only one video clip was recorded to the SD card. The expected behaviour is that multiple video clips would be created and stored to the SD card as long as the trigger remains active. Ref 1848

Motion Detection Issues

Issue with motion detection operating after a firmware upgrade. Ref 2039, 2011

Known Issues

Using Fixed Quality at 70%

Under certain lighting conditions, the EVO-12 camera will stop streaming when the fixed quality is configured to 70%. It is recommended to configure the fixed quality to a value less than 70% to avoid extremely high bit rates in extreme lighting conditions Ref 2098

Unable to set static IP address after changing Multicast RTSP port

After pressing Apply Settings button, the camera will not reboot so the new setting won't be applied. The workaround is to set the static address first and then change the Multicast RTSP port. Ref 2053

Streaming to Mobile Apps fails

Unable to view Live video streams in the Oncam Android or IOS mobile apps. Ref 2052

Playing video from SD card fails in Mobile Apps

The list of recorded video clips from the SD card is displayed in the Android and IOS mobile Apps but cannot be played in the app. Ref 2052

2nd fisheye resolution limited to ¼ MP

The second fisheye stream has been temporarily restricted to ¼ MP to allow for a more advanced motion detection algorithm.

Frame rates sometimes not set precisely via ONVIF

Very low frame rate settings applied via ONVIF are not programmed correctly in the camera and can result in slightly lower rates than requested. Ref: 1361

1.5.2-810 Release (Hot Fix)

(November 2019)

This maintenance hotfix (build 810) applies to all Evolution 12 360-degree 12MP cameras.

Fixes

Fixed Quality setting causing EVO-12 to be unresponsive

When the rate control was changed from CBR to Fixed Quality, occasionally the EVO-12 would become unresponsive.

Ref: 2015

Known Issues

2nd fisheye resolution limited to ¼ MP

The second fisheye stream has been temporarily restricted to ¼ MP to allow for a more advanced motion detection algorithm.

Changing admin user's password fails via ONVIF Web service

Changing the "admin" user's via the ONVIF Web services currently returns an error. It works correctly for other users, and the admin password can be changed successfully via the Web interface and the CGI API.

Ref: 1506

Frame rates sometimes not set precisely via ONVIF

Very low frame rate settings applied via ONVIF are not programmed correctly in the camera and can result in slightly lower rates than requested.

Ref: 1361

This maintenance release (build 776) applies to all Evolution 12 360-degree 12MP cameras.

This firmware has been tested to be Profile S conformant with the ONVIF Device Test Tool v.18.12 (revision 4782)

Fixes

[Typo in Web GUI](#)

CBR bitrate control was incorrectly listed as "CVBR" in Video Setup screen. CBR compression is now correctly labelled. As such the API "seth264settings.cgi" must be updated to seth264settings.cgi?camera=29&ratecontrol=cbr

Ref: 1215

[Factory Reset on Upgrade](#)

Fixes an issue with camera settings being reset to Factory Defaults after upgrading from 1.4.96 or 1.5.1

Ref: 1797

[WS-Addressing Namespace in Response](#)

Resolved an issue with the EVO-12is incorrectly responding that the ws5 fields are 2004 namespace structures and not 2005.

Ref: 1715

[Invalid Subscription ID](#)

Resolved an issue causing the camera to crash when receiving an invalid or wrong subscription ID.

Ref: 1814

[ONVIF Conformance and Stability](#)

Modifications made to maintain ONVIF conformance, fixed a stability issue causing an Out of Memory error.

Ref: 1322, 1673, 1782

Security Updates

[Updated Libraries](#)

Updated internal versions as published in the Common Vulnerabilities and Exposures (CVE) catalog.

Ref: 1755, 1756, 1757

Known Issues

[2nd fisheye resolution limited to ¼ MP](#)

The second fisheye stream has been temporarily restricted to ¼ MP to allow for a more advanced motion detection algorithm.

Changing admin user's password fails via ONVIF Web service

Changing the "admin" user's via the ONVIF Web services currently returns an error. It works correctly for other users, and the admin password can be changed successfully via the Web interface and the CGI API.

Ref: 1506

Frame rates sometimes not set precisely via ONVIF

Very low frame rate settings applied via ONVIF are not programmed correctly in the camera and can result in slightly lower rates than requested.

Ref: 1361

1.5.1-682 Release

(September 2018)

This release applies to all 360-degree Evolution 12 cameras.

This firmware has been tested to be Profile S conformant with v17.12 of the ONVIF Device Test Tool.

Enhancements

HTTP Tunnelling

Added support for HTTP Tunnelling for video streaming.

Ref: 1318, 1423

ONVIF Web Services Improvements

Implemented the new ONVIF Media2 service, and incorporated a large number of other improvements to the ONVIF Web service, following extensive partner testing.

Ref: 1237

Reboot button added to Web GUI

Renamed the "Factory Defaults" menu to "Maintenance" and added a new "Reboot Camera" button to make it easy to reboot the camera without the Camera Configuration Tool.

Ref: 1481

Fixes

Motion sometimes detected outside detection regions

Fixed an issue where motion could be incorrectly detected outside defined motion regions after the camera had rebooted.

Ref: 1341, 1381

Privacy and Motion regions not registered exactly as drawn

Fixed a scaling issue where regions for motion detection or privacy shrank slightly towards the top left corner of the image on saving. This made it impossible to define regions all the way to the bottom or right edge of the image.

Ref: 1310

VCams may not function properly on some ONVIF clients

Fixed an issue where, due to an error in an ONVIF parameter, some ONVIF clients may not have been able to display VCam streams directly from the camera. Ref: 1236

Known Issues

2nd fisheye resolution limited to ¼ MP

The second fisheye stream has been temporarily restricted to ¼ MP to allow for a more advanced motion detection algorithm.

Changing admin user's password fails via ONVIF Web services

Changing the "admin" user's via the ONVIF Web services currently returns an error. It works correctly for other users, and the admin password can be changed successfully via the Web interface and the CGI API.

Ref: 1506

Typo in Web GUI

CBR bitrate control incorrectly listed as "CVBR" in Video Setup screen. Ref: 1215

Frame rates sometimes not set precisely via ONVIF

Very low frame rate settings applied via ONVIF are not programmed correctly in the camera and can result in slightly lower rates than requested. Ref: 1361

1.4.96-601 Release

(April 2018)

This release applies to all 360-degree Evolution 12 cameras.

This firmware has been tested to be Profile S conformant with v17.12 of the ONVIF Device Test Tool.

Enhancements

Improved Compression Performance in Fixed Quality mode

A new compression rate control algorithm has been introduced in Fixed Quality mode that reduces bandwidth in lower light conditions, without impacting the perceived image quality. The camera's default rate control mode remains CBR.

Ref: 1325, 1302, 1324

Fixes

Extreme light change in scene

Resolved a rare occurrence where the camera could reboot when an extreme light source was shone directly into the sensor or an extreme light change occurred in the whole scene.

Ref:1377

Relay output quantity sometimes incorrectly reported in ONVIF

Fixed an issue where the number of relays reported in ONVIF was sometimes greater than 1.

Ref 1305

Known Issues

2nd fisheye resolution limited to ¼ MP

The second fisheye stream has been temporarily restricted to ¼ MP to allow for a more advanced motion detection algorithm.

Typo in Web GUI

CBR bitrate control incorrectly listed as “CVBR” in Video Setup screen.

Ref: 1215

VCams may not function properly on some ONVIF clients

Due to an error in an ONVIF parameter, some ONVIF clients may not be able to display VCam streams directly from the camera. This will only affect a few integrations that use edge dewarping rather than the preferred and more versatile client dewarping.

Ref: 1236

Motion sometimes detected outside detection regions

Motion can be incorrectly detected outside defined motion regions after the camera has rebooted.

Ref: 1341, 1381

Frame rates sometimes not set precisely via ONVIF

Very low frame rate settings applied via ONVIF are not programmed correctly in the camera and can result in slightly lower rates than requested.

Ref: 1361

1.3.87-554 Release

(January 2018)

This release applies to all 360-degree Evolution 12 cameras.

Critical Fixes

Internal Log Files Sometimes Written to Incorrect Storage

Fixed a bug in firmware v1.3.83-552 where log information could, under certain circumstances, be written to the incorrect internal storage. In extreme conditions, it is eventually possible for the camera's performance to be permanently affected.

Cameras running v1.3.83-552 **must** be upgraded as soon as possible to prevent this risk.

NOTICE: Upgrading to this version from v1.3.83-552 does **not** apply a reset to factory defaults, and does **not** affect the camera's IP settings.

NOTICE: Upgrading to this version from versions *prior to v1.3.83-552* **can change system functionality**.

- **ALL CAMERA SETTINGS INCLUDING IP SETTINGS WILL BE RESET TO FACTORY DEFAULTS UPON UPGRADE**
- When upgrading the camera over a routed connection, it will become unreachable outside the local subnet if there is no DHCP server to reapply the previous settings.

Ref: 1244, 1252

This release applies to all 360-degree Evolution 12 cameras.

Features

Motion Detection Algorithm

Enhancing efficiency, the new Motion Detection engine brings refined user settings to fine-tune motion detection. The new engine features eight user-definable regions and one full-scene region (active by default).

Ref: 839-846

User Settings

Motion Sensitivity:

Controls the sensitivity of the camera to object movement. Where low-contrast objects are difficult to capture, increase the sensitivity to detect these objects. Setting the sensitivity lower requires more motion to activate an alarm.

Notice: Higher sensitivity values in noisy environments may cause false alarms.

Motion Threshold:

The amount of moving pixels required to raise a motion alarm are determined by the threshold setting. Motion alarms are caused by the cumulative moving pixels regardless of their distribution. Setting the threshold higher increases the motion's time to activate an alarm.

Notice: Low motion thresholds in noisy environments may cause increased false alarms.

Motion Persistence:

The period when motion is detected in a frame prior to raising an alarm is the persistence. Raising a motion alarm immediately after the motion might lead to false alarms in noisy environments. Use the motion persistence setting to ensure the system raises an alarm only when persistent motion exists.

Motion Latency:

Motion latency defines how many frames an alarm remains true after motion stops. A low latency allows a rapid succession of motion events to appear as multiple alarms. A higher setting will group rapid triggers into a single alarm event.

API Calls

Configure the four new motion detection user settings using their corresponding CGI commands as follows:

`http://<ip_address>/analytics/setanalyticsconfig.cgi?motionsensitivity=50`

`http://<ip_address>/analytics/setanalyticsconfig.cgi?motionthreshold=50`

`http://<ip_address>/analytics/setanalyticsconfig.cgi?motionpersistence=2000`

`http://<ip_address>/analytics/setanalyticsconfig.cgi?motionlatency=1000`

Each of the commands have a matching getanalyticsconfig.cgi parameter that returns the value displayed to the user on the web page.

Low Light

The new motion detection engine is more robust with greatly improved reliability in low light conditions.

Factory Reset

The Factory Reset default settings for Motion Detection have been updated. The following settings are active after a Factory Reset:

- Motion detection is enabled over the full fisheye scene
- Motion Detection is set as the Active Trigger
- Alarm is enabled

LED Output as an Alarm Action

The camera LEDs may be forced to light red to indicate alarm activity. For example, to walk-test a motion detection configuration.

Ref: 947

Enhancements

Time Zone Database

Expanded available time zones list to cover full IANA Time Zone Database.

Ref: 1062

Present each VCAM as its own Video Source through ONVIF

This improvement allows the camera to operate more fully with more VMS platforms. Now many VMS platforms can use our ONVIF VCam streams directly from the camera, and control them using standard ONVIF PTZ commands (without requiring any Oncam-specific integration). Standard ONVIF Profile-S-conformant VMS platforms work out-of-the-box.

Ref: 901

Maximum Exposure Time (Shutter speed)

Improve clarity of moving objects in low light by limiting the exposure time.

Ref: 876

Retain IP Address on Soft Factory Default

By default, when resetting a camera to factory defaults, the essential IP settings such as IP address, mask, gateway, HTTP port and DHCP configuration are all preserved.

The camera remains reachable after a firmware factory defaults reset. The full reset including wiping the IP settings is still possible, but requires an additional check-box to be set in the GUI, or an additional parameter provided in the CGI command.

Ref: 887

Fixes

ONVIF Maximum Bandwidth Increased

Fixed a bug where maximum bandwidth was incorrectly limited to 5000 kbps, reducing image quality.

Ref: 1011, 1054

WDR Off by Default

Fixed an incorrect factory default state.

Ref: 977

Date & Time Overlay Off by Default

Fixed an incorrect factory default state.

Ref: 973

WS-Discovery Messages were missing AppSequence in the header

Improved ONVIF discovery implementation to prevent loosely-implemented VMS platforms from missing Oncam cameras.

Ref: 916

Recording List

Fixed a bug where some recordings appeared in the recording list with invalid length.

Ref: 862

SDK for UPnP Devices

Improved security for UPnP by upgrading the Portable SDK for UPnP Devices from version 1.6.6 to version 1.6.18. This addresses several security vulnerabilities that were found in the previous SDK version.

Ref: 971

SSH Security

Improved security for SSH by upgrading Dropbear to version 2016.74. This enhancement removes multiple vulnerabilities discovered in the previous Dropbear version.

Ref: 970

Fixed low-risk SSH security vulnerabilities.

Ref: 975, 976

Input.cgi

Input.cgi now correctly returns the state of the camera's external input.

Ref: 1110

1.1.49 Release

(March 2016)

This release applies to all 360-degree Evolution 12 cameras.

Features

Alarm Settings

An Email Alert option has been added to the alarm Action list available to the user

Video Setup

The following enhancements have been implemented in the Video Setup page:

- added controls for switching between Dual-Streaming and Vcam mode
- clarified the Sensor mode button to say: High Speed Sensor (30fps)
- added tool-tips for the settings

ONVIF

The default resolution of ONVIF profile for Fisheye2 has been set to 1/4Mpixel.

Miscellaneous

The user interface is now showing the latest Oncam branding

Fixes

- Fixed a bug where Milestone Corporate 2016 was unable to see an Evolution 12 camera over an ONVIF connection.
- Increased recording buffer size to guarantee continuous recordings between consecutive motion events.
- Clock settings default Region and Zone made consistent with Evolution 05.
- Now Region = Etc, Zone = UTC.

1.0.45 Release

(December 2015)

This release applies to Evolution12 360-degree cameras.

This firmware has been tested to be Profile S conformant with both v.14.12.SR1 and v.15.06 of the ONVIF Device Test Tool.

ATTENTION: CAMERAS WITH ORIGINAL v1.0.45 FIRMWARE MUST FIRST BE UPGRADED TO v1.1.49 BEFORE UPGRADING TO LATER VERSIONS

Firmware v1.1.49 is included in the v1.3.87-554 download package to facilitate this essential initial upgrade.

Failure to upgrade v1.0.45 to v1.1.49 first may make the camera unresponsive and require RMA.

Features

Video Streams

The camera is capable of providing 2x independent H.264 video streams (Fisheye1 and Fisheye2) plus a third MJPEG stream.

- the primary video stream offers a resolution of up to 9.6MP @12fps
- the secondary video stream offers a resolution of up to 4MP @14fps
 - the third video stream mirrors the resolution/fps of the second stream

Vcams

The camera can provide 4x independent Vcams streams; all with on-board dewarping.

- the Vcams video streams offer a resolution of up to 1MP @14fps

High-Frame Mode

The camera can be configured to deliver up to 30fps @2MP for the primary video stream. This is to provide the user with much more flexibility on the camera stream output depending on his needs.

Multicasting

This feature is available for the primary video stream and is available through CGI commands and from the camera's configuration web page.

Regions

The user can define up to:

- 10x rectangular privacy regions
- 16x polygonal motion detection regions

SD Card Recording

The camera can be configured to record a clip to an SD card based on triggered motion events.

Contact Information

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