GA Release Notes

ioi HD CB-5222
IP Bullet Analytic Camera
and
Auto Calibration Feature for
CF-5212/CF-5222
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1. Version Content

This version release supports the following key features:

- Automatic Calibration
- New Look and Feel in the Web Interface
- True/Shutter (Multi-Exposure) WDR
- Single-cable connection
- Motorized zoom and auto focus lens
- Full HD 1080p
- H.264/MJPEG IP streaming and analog video outputs
- Two-way audio support
- Solo Setup recording for a single camera
- Reduced false alarms
- Enhanced detection from a distance
- Improved analytic detection for scenes with high movement activity
- MTU setup for encrypted networks

This document includes Supported Products and Platforms, Key Features, Limitations, Known Issues, Upgrade Procedure, and United VMS Compatibility.

Related Documentation

The following documentation can be downloaded by clicking the document title:

- **ioi HD CB-5222 User and Installation Guide**
- **ioi HD CB-5222 Quick Installation Guide**
- **ioi HTML Edition Units User's Guide** (download from the ioi Analytics section)
- **DNA 2.1 User Manual**

1.1 Version Details

Full version details:

- Camera firmware version dt20160121NSX
- Analytics firmware version 2.1.3.50
- Analytics web page firmware version 2.1.3.50

1.2 Firmware Version Location

The following firmware is available from here:

- Camera firmware for PAL/NTSC versions (uImage_userland_ioi_HD_camera_20160121)
- Analytic firmware for PAL version (ioi_HD_analytic_2_1_3_50_PAL)
- Analytic firmware for NTSC version (ioi_HD_analytic_2_1_3_50_NTSC)
2. Supported Products and Platforms

This version is applicable to the following products:

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB-5222-11</td>
<td>Full HD 1080p bullet IP camera with built-in video analytics. D/N, WDR, IR Cut Filter, H.264, 25/30 fps. 1/2.8” 2.1MP CMOS, F1.4 motorized 3-10.5mm auto-focus, DC-Iris lens. 12VDC/24VAC/POE/POE+.</td>
</tr>
<tr>
<td>CB-5222-21</td>
<td>Full HD 1080p bullet IP camera with built-in video analytics. D/N, WDR, IR Cut Filter, H.264, 25/30 fps. 1/2.8” 2.1MP CMOS, F1.4 motorized 7-22mm auto-focus, DC-Iris lens. 12VDC/24VAC/POE/POE+.</td>
</tr>
<tr>
<td>CB-5222-31</td>
<td>Full HD 1080p bullet IP camera with built-in video analytics. D/N, WDR, IR Cut Filter, H.264, 25/30 fps. 1/2.8” 2.1MP CMOS, F1.6 motorized 6-50mm auto-focus, DC-Iris lens. 12VDC/24VAC/POE/POE+.</td>
</tr>
<tr>
<td>CF-5212</td>
<td>ioi HD 720p fixed IP camera with built-in video analytics and H.264/MJPEG compression. D/N, WDR, IR Cut Filter, H.264, 25/30 fps. 1/3” 1.3MP CMOS, with a choice of Auto-Iris, IR corrected lenses. 12VDC/24VAC/POE (802.3af Class 0).</td>
</tr>
<tr>
<td>CF-5222</td>
<td>ioi HD 1080p fixed IP camera with built-in video analytics and H.264/MJPEG compression. D/N, WDR, IR Cut Filter, H.264, 25/30 fps. 1.3MP CMOS, with a choice of Auto-Iris, IR corrected lenses. 12VDC/24VAC/POE (802.3af Class 0).</td>
</tr>
<tr>
<td>United 6.4 Update 6.4.0.6830 and higher</td>
<td>Update that supports these cameras is mandatory. Select Latitude, Horizon, or Meridian Update file.</td>
</tr>
<tr>
<td>United 7.0 Update 7.0.0.5710 and higher</td>
<td>Update that supports these cameras is mandatory. Select Latitude, Horizon, or Meridian Update file.</td>
</tr>
<tr>
<td>DNA 2.1</td>
<td>DVTEL Network Assistant (DNA) version 2.1.0.17 and above support IOI unit discovery, setup and firmware upgrade.</td>
</tr>
</tbody>
</table>

Note:
This firmware version is supported by Latitude, Horizon and Meridian.
3. Key Features

The ioi HD CB-5222 bullet analytic IP camera includes the following key features:

3.1 Automatic Calibration

The Automatic Calibration function automatically configures scene depth. The system discovers people in the scene and configures human markers automatically. This function eliminates the time and effort required to manually add human markers.

The Auto Calibration algorithm calculates camera height, focal length, and tilt angle according to the scene depth.

This feature also is available in the ioi HD CF-5212 and CF-5222 firmware.

To automatically configure depth settings

1. Verify that the camera is installed at a height of at least four meters (13 feet).
2. Verify that the horizon is less than 30% of the Field of View (FoV).

Figure 1: Horizon Line

3. From the Settings tab, select Analytics > Depth. The Auto depth screen opens.

Figure 2: Analytics > Depth Screen
4. From the Units drop-down list, select Feet or Meter.

5. Select Set estimated height.

6. Enter the estimated camera height in the text box

7. Click START. The camera automatically calibrates the depth.

8. Be sure that a person is walking along the Y (Vertical) axis of the FoV while Auto Calibration is in process. When the progress bar reaches 100%, the Auto Calibration is completed and the calculated results are displayed.

   **Note:** While Auto Calibration is in progress, you can proceed with the next steps in the analytic configuration.

   **Caution:**
   1. The Auto Configuration algorithm takes at least five minutes to run. If you stop the procedure before the progress bar reaches 100%, the analytic process will reset.
   2. If you change from Auto to Manual mode, you must wait until the analytic process resets in order to use Manual mode.

9. Select the Auto > Step 2: Verification tab.

10. Verify that the horizon, camera height, and human marker settings are correct.

   **Note:** If the results are unsatisfactory, run Auto Calibration again (follow Step #1 on-screen) or click MANUAL to manually configure the depth settings.

11. After finishing the Auto Configuration, click the MANUAL tab.

12. Select the Manual > Step 4: Verification tab to complete the depth configuration.

### 3.2 New Look and Feel in the Web Interface

The new firmware version includes a new web interface, which is simple and aligned with the user interface of new Quasar 4K and QHD cameras.

### 3.3 True/Shutter (Multi-Exposure) WDR

The ioi HD camera supports True/Shutter (multiple exposure) Wide Dynamic Range (WDR). WDR resolves high contrast or changing light issues and creates a constant video output level. The camera creates a new image with a wide dynamic range by using a combination of slow- and fast-exposure shutters and an algorithm to determine the optimal mix of light and dark regions within the scene from the two shutters. It is possible to configure the camera’s exposure according to the environmental luminance (indoor lighting, low-lighting, natural lighting, mixed lighting, or fluorescent lighting). In order to use this function, WDR must be enabled (configured as On) from the Camera > Misc. screen. WDR settings are configured from the Camera > Exposure screen.
3.4 Single-Cable Connection

When powered by a Power over Ethernet (PoE) or PoE+ connection, the CB-5222 requires only one cable for network, power, video and analytics. The unit can also be powered by a 12VDC, 24VDC, or 24VAC power supply. The camera also supports an analog video BNC connection.

3.5 Motorized Zoom and Auto Focus

Three camera models are available, each with a different motorized zoom and auto focus lens. The zoom and focus are adjusted from the View Mode pane in the Live View screen.
Before setting the zoom and focus, you must select the TV system first.

To set the TV system

1. From the Settings > Camera > Misc. screen, select the required video format (PAL/NTSC). The default video format is PAL. See Figure 3: Camera > Misc. Screen.

2. Click SET.

To set the zoom and focus

1. From the View Mode pane on the Live View screen, adjust the Zoom so that it includes the required Field of View.

2. Focus the lens automatically or manually.

Note:

Changing the video format restores the unit to factory defaults and deletes any analytic configuration that was set previously.

3.6 Full HD 1080p

The ioi HD camera supports the following resolutions: 1920 x 1080 (PAL/NTSC), 1280 x 720 (PAL/NTSC), 720 x 576 (PAL)/480 (NTSC)

3.7 H.264/MJPEG IP Streaming and Analog Video Outputs

The units support the following MJPEG/H.264 frame rate settings:

- The default setting of the MJPEG frame rate is 30 fps in NTSC and 25 fps in PAL.
- The default setting of the H.264 frame rate is 30 fps in NTSC and 25 fps in PAL. The setting range is from 1 to 30 in NTSC and 1 to 25 in PAL. Settings are:
  - PAL: 1, 5, 13, and 25 fps
  - NTSC: 1, 2, 3, 6, 7.5, 10, 15, and 30 fps

3.8 Two-way Audio Support

Bidirectional audio is supported by Latitude and via the camera’s user interface in Unicast mode only. Users with Talk and Listen permissions can use two-way audio, which is enabled from the Home page of the unit’s browser-based interface. Latitude supports G.711 audio compression.

Note:

Multicast support is available only for Audio-in.
3.9 Solo Setup Recording for a Single Camera

The Solo Setup function enables you to install and setup the camera at a remote site without requiring another person’s assistance. It is very useful and should be used even if you have another person’s assistance. See Appendix.

3.10 Reduced False Alarms

The analytic firmware includes an algorithm that improves the identification of people who are standing or moving upright in a scene. The system can detect sophisticated intruders (for example a camouflaged or crawling person), as well as enable the identification of upright people, which will reduce false alarms. This function is enabled or disabled according to the rule in the Basic Settings area of the Analytics > Rules screen.

Note:

The following limitations apply to this function:

1. It is possible that a person who is not standing upright might not be detected when:
   - Crawling
   - Walking on all four (like an animal)
   - Camouflaged to look like an inanimate object (i.e., small tree)
   - Running and viewed from the side
   - Bent over and viewed from the side

2. The camera should not be facing straight down (i.e., it should be at a 30-40 degree angle from the object).

3.11 Enhanced Detection from a Distance

The unit’s analytic firmware includes an algorithm that improves the distance from which smaller objects are detected. This function is disabled by default. To enable this function, check the checkbox in the Advanced Settings area of the Analytics > Firmware screen.

3.12 Improved Analytic Detection for Scenes with High Movement Activity

ioi HD offers enhanced detection in scenes where there are large or multiple objects, and there is movement in up to 80% of the frame. This function is enabled by default in the Advanced Settings area of the Analytics > Firmware screen.

3.13 MTU Setup for Encrypted Networks

When data is encrypted on a network, additional bytes are added to a data packet, which slows real-time transmission time. In order to improve real-time video performance, the MTU (Maximum Transmission Unit) size can be defined in the MTU text box in the Advanced section of the System > Network > Basic screen. The default value is 1500, which is the maximum RTP packet size. The minimum value is 700. Select the value according to the size of the packets that you are transmitting.
## 4. Limitations

Unless otherwise noted, the following table refers to limitations in the GA release of CB-5222:

<table>
<thead>
<tr>
<th>BUG ID</th>
<th>SUMMARY</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>771</td>
<td>CB-5222 and CF-5212/5222 – Invalid NTP addresses are not indicated to the user.</td>
<td>Limitation by design</td>
</tr>
<tr>
<td>786</td>
<td>CB-5222 and CF-5212/5222 – The camera configuration restore process does not include a progress bar.</td>
<td>Limitation by design</td>
</tr>
<tr>
<td>31510</td>
<td>CB-5222 and CF-5212/5222 – The analytic firmware downgrade operation is not supported.</td>
<td></td>
</tr>
<tr>
<td>32192</td>
<td>CB-5222 and CF-5212/5222 – The analytic service takes an additional minute to initialize and provide detection after the camera is accessible.</td>
<td>Define a storage location that does not require Administrator privileges on the PC.</td>
</tr>
<tr>
<td>38379</td>
<td>A snapshot or recording is not created unless the user runs IE as Administrator in Windows 8.</td>
<td>Log in as Administrator or right-click Internet Explorer and run as Administrator</td>
</tr>
<tr>
<td>38387</td>
<td>The user must be defined and set as an administrator to install DVPlayer on Windows 8 and 8.1.</td>
<td></td>
</tr>
<tr>
<td>38388</td>
<td>Audio Out does not work when the camera is set to Multicast mode.</td>
<td></td>
</tr>
<tr>
<td>40573</td>
<td>CB-5222 and CF-5212/5222 – The camera sets the <em>Set camera height</em> parameter, but does not save the setting upon refresh.</td>
<td></td>
</tr>
</tbody>
</table>
## 5. Known Issues

Unless otherwise noted, the following table refers to known issues in the CB-5222 GA release:

<table>
<thead>
<tr>
<th>BUG ID</th>
<th>SUMMARY</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>38403</td>
<td>Boost upon alarm is not supported on United VMS.</td>
<td></td>
</tr>
<tr>
<td>40452</td>
<td>A Response event occurs twice after reset.</td>
<td></td>
</tr>
<tr>
<td>41504</td>
<td>Analytics &gt; Depth &gt; Auto screen – Estimated heights entered in feet are displayed as the same number of feet, but indicated as meters in the Camera height results (i.e., 19 feet displayed as 19 meters).</td>
<td></td>
</tr>
<tr>
<td>41567</td>
<td>Analytics &gt; Rules screen – When running IE 10, after clicking APPLY, the &quot;Saving configuration&quot; message is displayed in the background behind the Live View.</td>
<td>Scroll down in order to view the message.</td>
</tr>
<tr>
<td>41608</td>
<td>Occasionally, when installing ActiveX for the first time, a message is displayed that ActiveX could not be installed.</td>
<td>In the Internet Explorer Tools &gt; Internet Options &gt; Advanced Security settings section, select the “Allow software to run or install even if the signature is invalid” checkbox. Uncheck the checkbox after installing ActiveX.</td>
</tr>
</tbody>
</table>
6. Upgrade Procedure

If it is necessary to upgrade the camera system firmware and analytics firmware. Each firmware is contained in a separate file. See section 1.2, Firmware Version Location, to download the firmware files.

The firmware can be updated by using the DVTEL Network Assistant (DNA) tool or the camera’s web interface.

**Note:**

It is recommended to update via DNA if you are upgrading multiple units.

6.1 Upgrading the Camera through DNA

DVTELS’s DNA tool can be used to upgrade the camera’s system firmware and the analytics firmware simultaneously. After upgrading the camera and analytics firmware, you must upgrade the web page firmware. You can download the latest DNA software version from [here](#).

**Note:**

Only DNA version 2.1.0.17 or higher supports CB-5222.

To upgrade the camera and analytics firmware

1. Backup your system configuration before performing the upgrade procedure.
   Backup the analytics configuration by opening the **Analytics > Backup & Restore** screen.

2. Upon discovery of the ioi HD unit(s), select the relevant unit(s) from the Discovery list.
   a. Select the unit(s) to upgrade.

   ![Figure 5: DNA Discovery List](#)

   b. Click the **Firmware** icon on the navigation bar.

   c. Select the camera firmware file (uImage_userland_ioi_HD_camera_20160121.img) and analytics firmware file (ioi_HD_analytic_2_1_3_50_PAL.utk for PAL or ioi_HD_analytic_2_1_3_50_NTSC.utk for NTSC) from the relevant fields in DNA.
d. Click the **Upgrade** button. DNA upgrades both files simultaneously.

e. Restore the analytics setting by selecting **Analytics settings from file** in the *Restore* section of the **Analytics > Backup & Restore** screen.

**Caution:**
Performing an analytics restore deletes all settings except the Depth and Rules settings. Responses, Scheduled Actions and On-Screen Display screen settings will not be saved. It is NOT recommended to select **Full restore from file**, which disables the Enhanced detection function.

For further details, refer to the *DNA 2.1 User Manual*.

### 6.2 Upgrading the Camera through the Web Interface

It is necessary to upgrade the camera system firmware and analytics firmware, each of which are contained in separate files. The firmware should be updated in this order:

1. Update analytics firmware
2. Update camera firmware

**To upgrade the analytics firmware**

1. Select the **SETTINGS** tab on the navigation bar.
   a. Select the **Analytics > Firmware** tab on the sidebar.
   b. Click the **Browse** icon to locate the analytics firmware file.
      - For PAL, select `ioi_HD_analytic_2_1_3_50_PAL.utk`.
      - For NTSC, select `ioi_HD_analytic_2_1_3_50_NTSC.utk`.
   c. Click the **UPGRADE** button to upload the analytics firmware. The firmware upgrade process starts.
   d. Restore analytic settings from the backup file.
To upgrade the camera firmware

1. Backup your system configuration before performing the upgrade procedure. Backup the analytics configuration by opening the Analytics > Backup & Restore screen.

2. Select the SETTINGS tab on the navigation bar.
   a. Select the System > Maintenance > Software Upgrade tab on the sidebar.
   b. From Step 1 on the screen, select the binary file to upload (uImage_userland_ioi_HD_camera_20160121.img).
   c. From Step 2 on the screen, select the file uImage_userland.
   d. Click Upgrade. The firmware upgrade process starts.
7. United VMS Compatibility

It is necessary to install an Update Patch in order for ioi HD to operate with United VMS 6.4 and United VMS 7.0. Select the Update Patch file according the platform (Latitude, Horizon, or Meridian).

7.1 Upgrade Procedure

If you do not have United VMS 6.4 or United VMS 7.0:

- If you have Latitude 6.2, first upgrade to Latitude 6.3.
- If you have Latitude 6.3, upgrade to United VMS 6.4.
  1. Install United VMS 6.4 on all client and server machines.
  2. Install the Update Patch 6.4.0.6830 or higher version on all servers.
- If you have United VMS 6.4, you can upgrade directly to United VMS 7.0.

7.1.1 United 6.4 Update Patch

To install the United 6.4 Update Patch

1. Download the Update Patch required for your VMS or NVR from here.
2. Run the file on every server and workstation in the system.
3. Upgrade the Directory/EDB.
4. Upgrade each Archiver.
5. After all the servers are upgraded, upgrade the workstations using the method below.
6. In the Latitude client application, from the Help tab, select the Check for Updates option. A popup opens, indicating that there is an update to download from the Update server.
7. Select Yes to download the update file. A popup appears on the screen.
8. Click Install. The installation may take several minutes.
7.1.2 United 7.0 Update Patch

To install the United 7.0 Update Patch

1. Download the Update Patch required for your VMS or NVR from [here](#).
2. Run the file on every server and workstation in the system.
3. Upgrade the Directory/EDB.
4. Upgrade each Archiver.
5. After all the servers are upgraded, upgrade the workstations using the method below.
6. In the Latitude client application, from the **Help** tab, select the **Check for Updates** option. A popup opens, indicating that there is an update to download from the Update server.
7. Select **Yes** to download the update file. A popup appears on the screen.
8. Click **Install**. The installation may take several minutes.

7.2 ioi Limitations in Latitude

Limitations exist on using Latitude to change the following settings, which can be changed on the ioi HD Streaming screen:

- **Streaming > Video Format > Video Resolution**: To set MJPEG on Latitude, from the **Video Settings > Live > Advanced Settings > Compression** screen, right-click the unit on the camera tree, and from the **Rediscover unit** dialog box, select the **Discover MJPEG video encoders** checkbox. To set H.264, do not select the checkbox. Click **OK**. The unit is rediscovered with the new video resolution.

![Rediscover unit dialog box](image)

- **Streaming > Video Format > GOV Settings**: To change the GOV setting from Latitude, you must multiply the frame rate by the key frame interval in order to obtain the desired GOV setting. Go to **Video Settings > Live**. In the **General area**, enter the frame rate in the **Frame Rate** field. In the **Advanced area**, enter the key frame interval in the **Key Frame Interval** field.
• Streaming > Video Compression > MJPEG/H.264 Compression setting: You must rediscover the unit after changing the setting in Latitude in **Video Settings > Live> Advanced Settings> Rate Control Mode**.

• Streaming > Video OCX Protocol: If you select Unicast or Multicast mode for the video on Latitude on the **General > Stream Connection Type** screen, this setting is also applied to the audio in port on the device’s **Microphone** screen.

• Streaming > Video Compression > CBR mode setting: Constant Bit Rate is detected automatically by Latitude in **Video Settings > Live> Advanced Settings> Rate Control Mode**. This setting cannot be changed in Latitude.

• Camera > Wide Dynamic Range: This setting cannot be changed in Latitude.

• Camera > Backlight Compensation: This setting cannot be changed in Latitude.

• Camera > Day/Night: This setting cannot be changed in Latitude.
8. Appendix

The Solo Setup function enables you to install and setup a single camera without requiring another person’s assistance and to configure analytics.

![Solo Setup Screen](image)

*Figure 7: Solo Setup Screen*
To perform a solo setup

1. Click the **Solo Setup** tab. The Solo Setup keypad opens with the following control icons:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Function</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start Recording</td>
<td>Starts recording and browses to destination folder where the clip will be saved</td>
</tr>
<tr>
<td></td>
<td>Stop Recording</td>
<td>Stops recording</td>
</tr>
<tr>
<td></td>
<td>Browse</td>
<td>Browses to the destination folder where clip is stored and loads the clip</td>
</tr>
<tr>
<td></td>
<td>Play/Pause</td>
<td>Speed X1/X0</td>
</tr>
<tr>
<td></td>
<td>Fast Forward</td>
<td>Speed X2, X4, X8, X16. Click to increase or decrease speed.</td>
</tr>
<tr>
<td></td>
<td>Rewind</td>
<td>Speed -X2, -X4, -X8, -X16. Click to increase or decrease speed.</td>
</tr>
</tbody>
</table>

2. On the Solo Setup control keypad, click **Start Recording** to record a view in the camera’s field of view.

3. Select a folder where to store the clip. Recording starts when the folder is selected.

4. Walk through various locations across the vertical axis of the camera’s field of view in order to place ground and height markers and guidelines in the clip.

5. Click **Stop Recording**.

6. Click **Step 1: Ground & Height** and follow the instructions.

7. Click **Browse** to load the clip from the folder where it is saved.

8. Use the **Play**, **Pause**, **Fast Forward**, and **Rewind** buttons on the Solo Setup keypad to explore the clip. The status of the view is displayed on the bottom left side of the screen.
9. Click the round **Play button** on the control panel located to the left of the monitor to exit *Clip* mode and return to *Live* mode. The caption under the monitor changes from *Clip* to *Live*.

![Analytics > Depth Control Panel](image)

*Figure 8: Analytics > Depth Control Panel*

10. Proceed to the tabs for Steps 2-4 of the Depth Setup to complete the setup and apply settings.

**Note:** At any time it is possible to click the **Verification** tab to verify and apply settings.
9. Disclaimer

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## Contacting DVTEL

To contact us, write us at info@dvtel.com or contact your local office:

<table>
<thead>
<tr>
<th>CORPORATE HEADQUARTERS</th>
<th>ASIA PACIFIC REGION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVTEL, Inc.</td>
<td>DVTEL</td>
</tr>
<tr>
<td>65 Challenger Road</td>
<td>60 Paya Lebar Road</td>
</tr>
<tr>
<td>Ridgefield Park, NJ 07660</td>
<td>#12-16 Paya Lebar Square</td>
</tr>
<tr>
<td>USA</td>
<td>Singapore 409051</td>
</tr>
<tr>
<td>Tel: 201.368.9700</td>
<td>Tel: +65 6DVTEL00 (6388-3500)</td>
</tr>
<tr>
<td>Fax: 201.368.2615</td>
<td><a href="mailto:info.apac@dvtel.com">info.apac@dvtel.com</a></td>
</tr>
<tr>
<td>Order Fax: 201.712.0343</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:info@dvtel.com">info@dvtel.com</a></td>
<td></td>
</tr>
</tbody>
</table>

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|Fax: +61 8 8235 9255             | Tel: +44 (0) 1494 430240     |
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