TELEMATICS
MOBILE INFORMATION EXCHANGE

Version 1.7: April 2022

MiX Vision AI

Installation and Calibration Guide

MiX Vision AI: Installation and Calibration Guide

Introduction

MiX Vision AI is an advanced dash camera with a built-in AI processor to detect driving events such as lane departure, forward collision, following distance and driver behaviour such as fatigue, distraction, smoking, and phone call usage. The C6D AI can alert the driver in real-time of dangerous behaviours, and upload events to a monitoring platform that can be reviewed by a fleet manager to aid them in coaching the drivers to reduce risk. MiX Vision AI utilizes Machine Vision based Video Analytic technology to detect road dangers and unsafe driving behaviours. Detected events will trigger a voice prompt and audible and visual (optional AI Driver coach) notifications to alert the driver in real time and recordings are uploaded to the cloud simultaneously. The DSM (Driver Status Monitoring) camera detects any driver distraction or fatigue events, and the MiX Vision AI Main unit detects any ADAS (Advanced Driver Assistance System) events on the road.

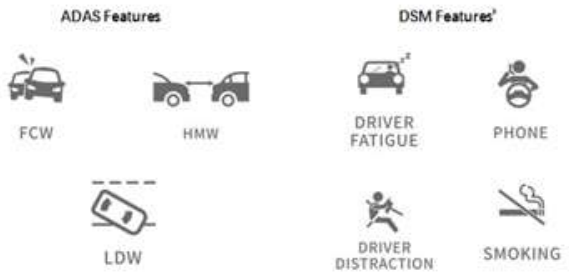

Figure 1: ADAS and DSM supported features.

Figure 2: MiX Vision C6D-AI Main Components

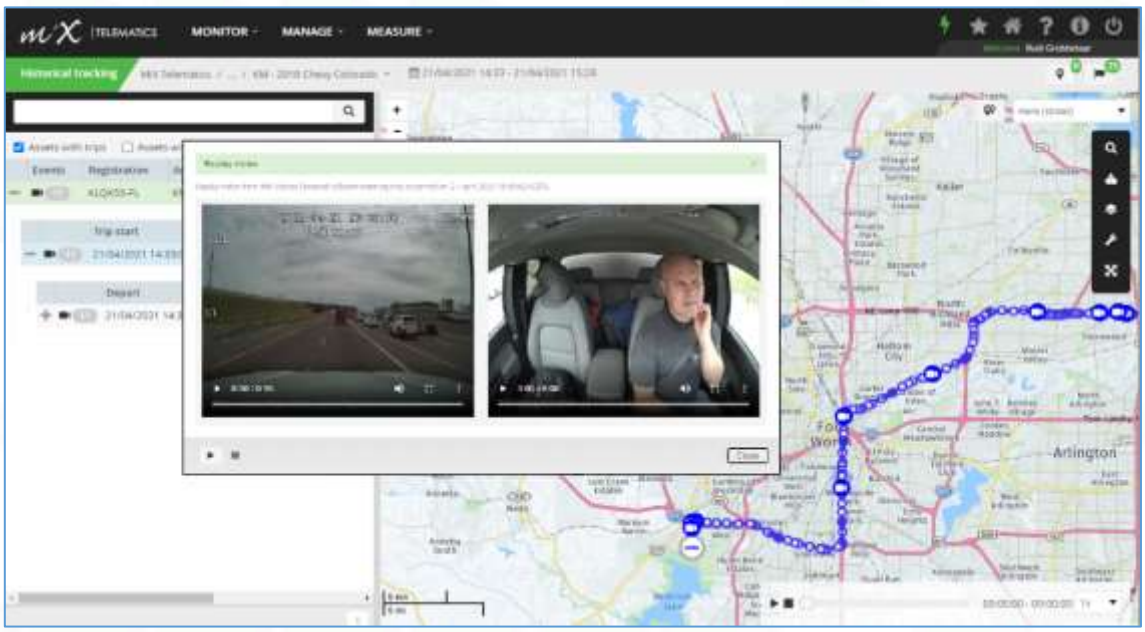

Figure 3: MiX Telematics backend

1 Hardware Components

Figure 4: System Diagram.

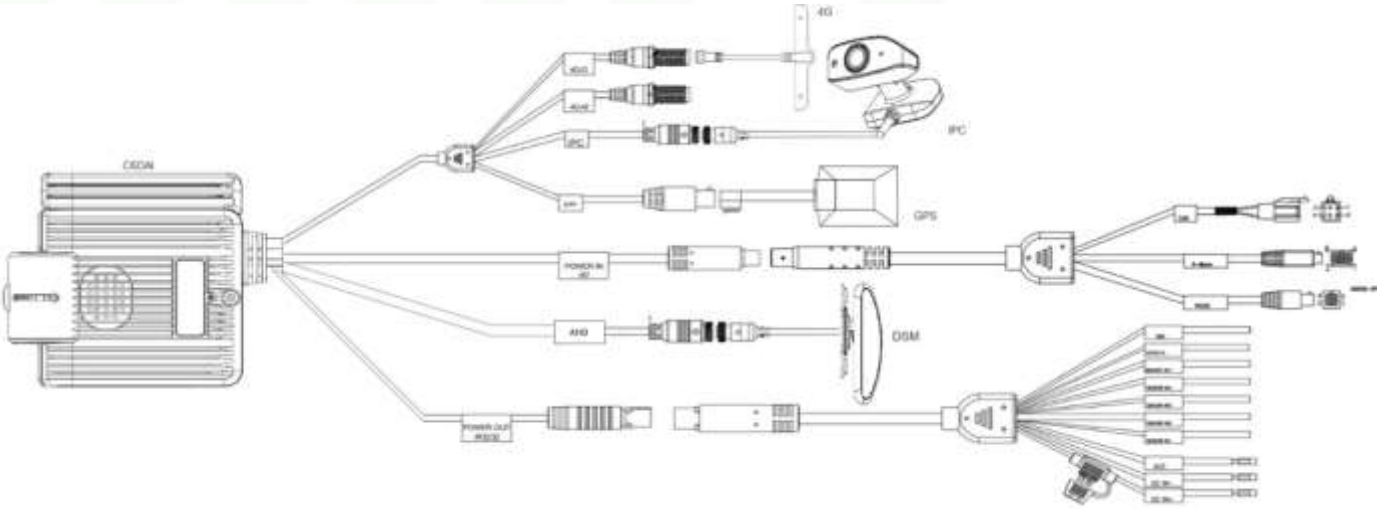

Figure 5: Connection overview.

1.1 Components

Note that the packing list for different orders can be slightly different and dependent on what you ordered.

No.	Image	Name	Use	Qty.
1		Main Unit	Video recorder and ADAS	1pcs
2		Driver Camera: Dash Mount (**Optional**)	DSM camera	1pcs
3		Driver Camera: A-Pillar Mount (**Optional**)	DSM camera	1pcs
4		InCab Camera	Cab camera	1pcs
5		10-Pin power cable	Power, IO	1pcs
6		GPS receiver	Vehicle positioning	1pcs
7		4G Antenna (**regional specific**)	4G Antenna	2pcs
8		Serial cable	RS232,CAN, AI Driver Coach	1pcs
9		Torx T8 screwdriver	Camera adjustment, SD,SIM card slot cover.	1pcs

No.	Image	Name	Use	Qty.
10		Socket-mounted fuse 15A	Fuse	1pcs
11		Socket-mounted fuse 7.5A	Fuse	1pcs
12		Wipe	Lens/surface cleaning	1pcs
13		SD card	Data storage	2pcs
14		Standard SIM card	Communications, not included	1pcs
15		AI Driver Coach (**Optional**)	AI Beep and Event Icons	1pcs

1.2 Tools Required

Commonly Used Installation Tools				
No.	**Image**	**Tool**	**Use**	**Qty.**
1		Power drill	Drill in screws	1pcs
2		Common screwdriver kit	Tighten and adjust the cam	1pcs
3		zip tie	Securing wires	Several
4		Marker pen	Marking measurements	1pcs
5		wire stripper	Cutting wires	1pcs
6		wire pliers	Cutting wires	1pcs
7		Waterproof tape	Extension line connection	1pcs
8		Electric tape	Securing wires	1pcs
9		Multimeter	Vehicle power, pulse signal, voltage testing	1pcs

DSM Camera Installation Tools				
No.	**Image**	**Tool**	**Use**	**Qty.**
1		Allen wrench	Adjusting the DSM camera angles	1pcs
2		Self-tapping screws	Fixing the camera in place, standard	4pcs
ADAS Camera Installation Tools				
1		50M tape measure	ADAS calibration	1pcs
2		5M tape measure	ADAS calibration	1pcs

2 System Installation Overview

2.1 System Installation

The installation locations are indicated on the image below. The Main and InCab units are mounted on the windscreen. For the Driver camera, we have two options depending on what you ordered. You can either use the Dash Mount variant, which is mounted in front of the driver or the A-Pillar option, which is mounted on the A-Pillar to the side of the driver.

Figure 6: Installation Diagram.

2.2 Power supply, Ignition and IO signals

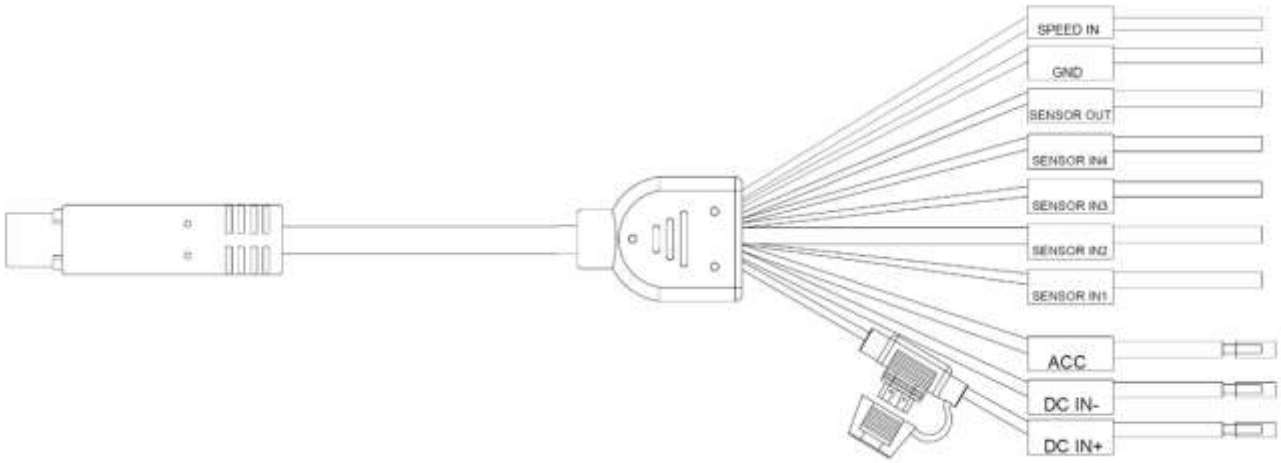

Figure 7: Power supply, ignition, and I/O signals.

Colour	Label	Description
RED	DC IN +	Vehicle Power Supply (9-36VDC)
BLACK	DC IN -	Chassis Ground
ORANGE	ACC	Ignition Line
GREEN	SENSOR IN1	Left/Right Turn Signal*
YELLOW	SENSOR IN2	Left/Right Turn Signal*
PURPLE	SENSOR IN3	*Not used*
BROWN	SENSOR IN4	*Not used*
WHITE	SENSOR OUT	*Not used*
BLUE	SPEED IN	Pulse input for Speed
BLACK	GND	*Not used*

*Configurable

The vehicle speed can be read from the vehicle's pulse signal, CAN bus or GPS, for detailed settings see section 4.

2.3 Serial Ports

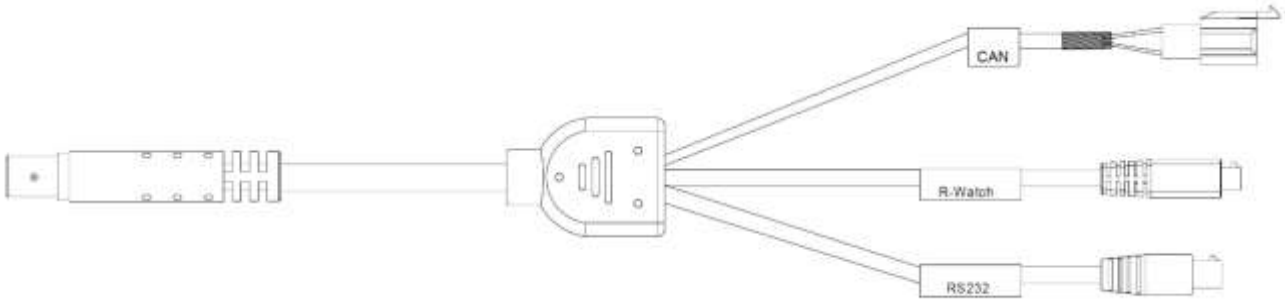

Figure 8: CAN, RS-232 and Driver Coach Interface.

The cable also supports the communication with the Driver Coach device and a RS-232 interface.

NOTE: Currently only support **GPS** source.

2.4 Hardware Preparation

Remove the bracket from the back for the main unit installation, (slid towards harness side to remove).
Remove the cover from the side to install the SD card(s) and SIM card.
Ensure to secure the locking screws once installed and SIM card and SD Cards added.

Figure 9: Main unit preparation.

2.4.1 SIM and SD Card

A Mini SIM (2FF) Card is required for the MiX Vision AI.

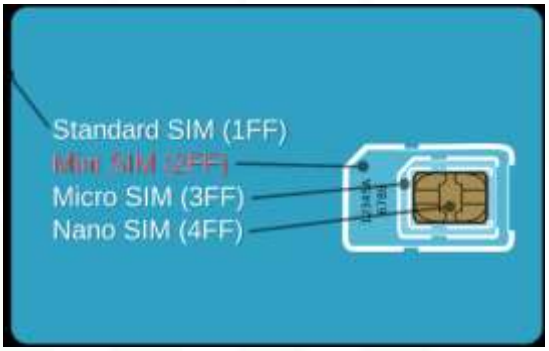

Figure 10: Size of the required SIM Card

If SD-Cards are not fitted yet, ensure the SD card is on write enable option and not locked.

Figure 11: Enabling the SD Card

3 Installation

Depending on the model of the vehicle, select the most appropriate installation location. (GPS and 4G antenna are towards to the sky).

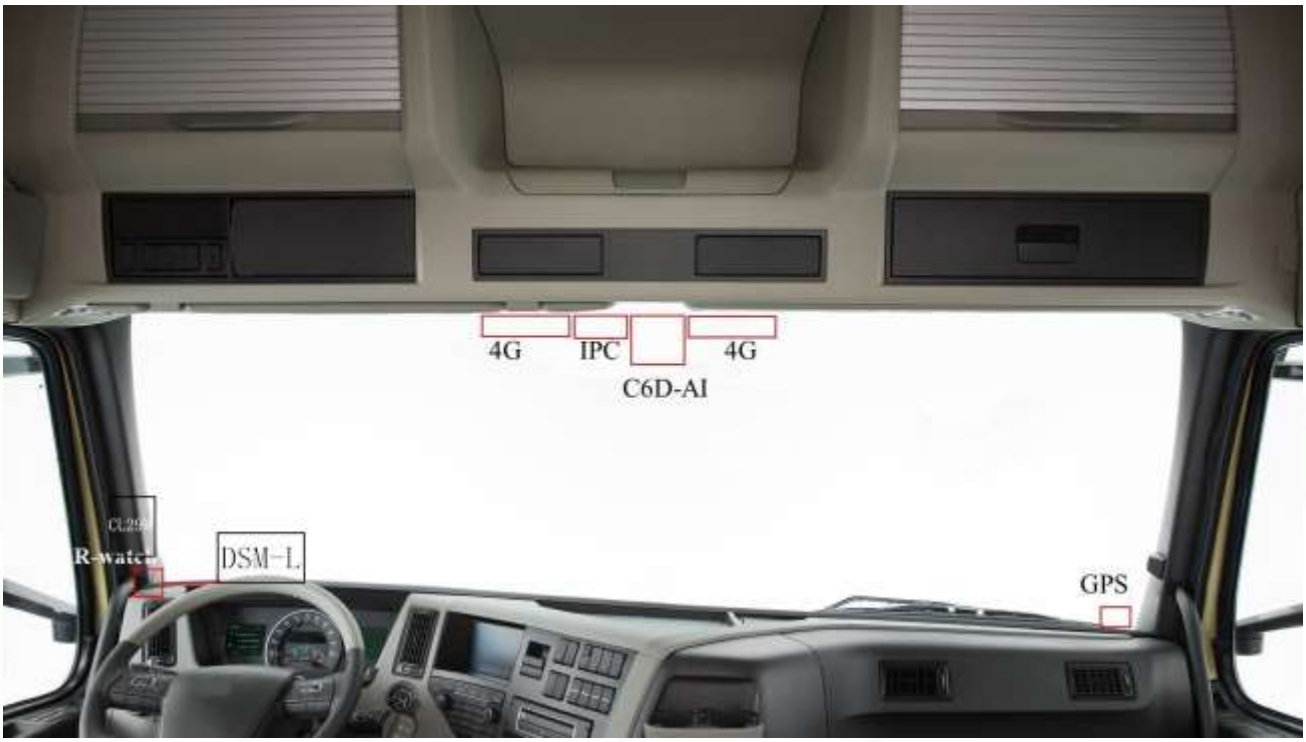

Figure 12: Usual installation locations.

3.1 Connect power supply and ignition signal wire

- Connect the ACC line on the 10PIN power cord with the vehicle ignition signal line.

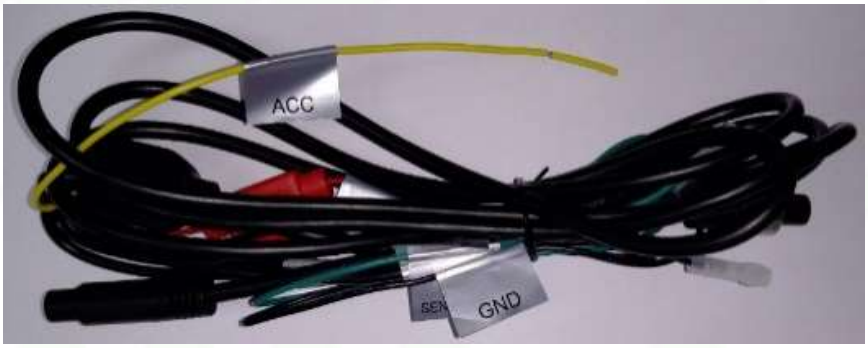

Figure 13: Power Cord.

Important:

- Before connecting the ACC cable to the ignition wire of the vehicle, make sure that the vehicle is turned off.
- The power cord (DCC IN+ and DCC IN-) should be directly connected to the vehicle battery. DO not use the GND wire to connect to the battery.
- **Attention**: The power cord is still 9-36V after the ACC is turned off

3.2 Ignition Start-up and debug

Please use your mobile phone to scan the QR code on section 5 (Calibration) and install APP (Veyes).

- After installing all MiX Vision AI parts (Road Camera, Driver Camera, InCab Camera, GPS module, 4G antenna (if applicable), AI Driver Coach), turn on the ignition switch to start the vehicle, powering up the MiX Vision AI. Review LED status indicator during the boot process:
  - During power-on and start-up = steady red.
  - After the start-up is completed, if the indicator light flashes green, it indicates that the Wi-fi has been turned on. If there is no connection request after a period of time, the Wi-fi will be automatically turned off to reduce power consumption.
  - If the indicator light is flashing red, it indicates that the boot is completed, but there is a module failure, including
    - the WIFI module does not exist, or
    - the GPS module does not exist, or
    - the 4G module does not exist, or
    - the video is lost, or
    - the memory does not exist.
  - After turning off the ignition, the device will enter a shutdown countdown instead of immediately shutting down.

3.3 Main unit installation

The Main unit should be mounted on the middle of the windshield and the lens area can be covered by the wiper range. It must be installed between 1.3m to 2.8m high from the ground.

Check live view image for the camera BEFORE securing it on the windshield, as it requires a clear and horizontal image.

Figure 14: Main unit installation location

3.3.1 Position selection

- The ADAS camera must be installed in the middle of the front windshield without affecting the driver's line of sight.
- If the windshield wipers are installed as below (photo), the ADAS camera should be installed in the wiping area. Ensure the ADAS camera installation area (especially the lens) can be cleaned in the rainy weather. The stationary wiper cannot cover the ADAS camera, as this will affect ADAS functionality.

Figure 15: Possible installation locations.

- If the vehicle has wiper blades in the middle of the windshield (e.g. vehicle below), The ADAS camera can be installed within the working area of left and right wipers and ensure the ADAS camera (especially the lens) installation area glasses can be cleaned in the rainy weather.
- Recommended installation height range of ADAS: 150cm~240cm.
- Allows installation height range of ADAS: 130cm~280cm.

Figure 16: Installation location if wiper rests in the middle of the windshield.

3.3.2 Device Installation

- Disassemble the bottom base plate cover of the main unit.

Unscrew the screw on the top. The screw is fixed to the main unit.

Slide the two pieces to unclip the baseplate

Remove base plate

Main unit separated

Figure 17: Preparing the main unit for installation.

- Wipe the installation location with the alcohol-pad (come with device), and make sure the glass is clean and dry before installation.
- Tear off backing paper of the 3M adhesive tape from the base of the unit, place it on the designated position, and press it firmly and evenly for 1 minute.

Figure 18: Preparing the main unit for installation.

- Re-fit the main unit to the mounted base-plate and affix with torque screw.

Base plate mounted to window

Align main unit to base plate so that the screw and screw hole line up

Push upwards to clip unit in place on base-plate

Secure the assembly by screwing back in place.

Figure 19: Steps for installing the Main unit.

3.3.3 Installation measurements

1. After the ADAS camera is installed, use a measuring tape to measure vertically and find the corresponding point on the ground (Point B) and then draw one line for 30 meters (from Point B to Point C) and place a marker as reference point.
2. Take note of the Height measurement (AB) for later use in a calibration step.

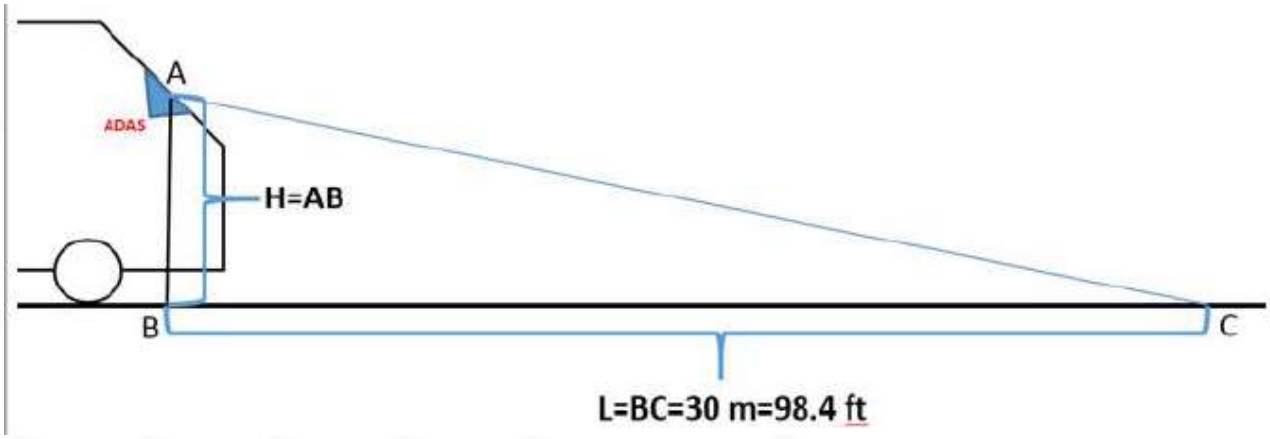

Figure 20: Measuring calibration distances.

3.4 Driver Camera Installation

Install the Driver Camera in place according to the system installation diagram (section 3).

There are two Driver Camera options (Dash or A-Pillar mount) depending on what type you ordered.

3.4.1 Dash Mount Driver Camera Installation

Tighten the bottom screws and mount camera right above the steering wheel on the dashboard in front for the driver.
Secure the camera AFTER the calibration is finished.

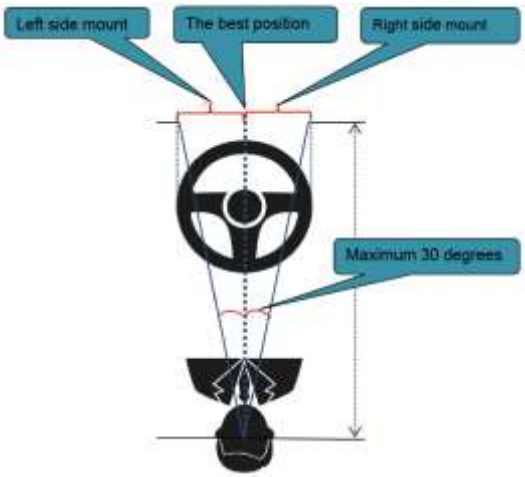

Figure 21: Dash Mount Driver Camera installation.

Driver Camera should be mounted 70-120 cm distance from the driver's eyes.

Figure 22: Correct Driver Camera Installation.

Notes:
1. The driver's face should not be blocked by the steering wheel.
2. The driver's head must be in the middle of the image.

Correct Installation, no obsctructions

Incorrect installation, large section blocked by steering wheel and hand

Figure 23: Examples of correct and incorrect Dash Mount installation.

3.4.2 A-Pillar Mount Driver Camera installation

Install the Driver Camera in place according to the system installation diagram (section 3).

- The installation position is on the left/right side of the A-pillar, and the height is aligned with the drivers shoulder and face to ensure correct view of camera.
- In order to keep the Camera facing the driver's face with a slight up-ward angle, the bottom mounting screw should be pointed closer to the driver as shown on image below.
- Tear off the protective cover on the lens surface, adjust the horizontal and vertical angles of Camera according to the image, so that the right side of the image is close to the left side of driver's seat, and the face image should not be too high. You can refer to the following image.

Figure 24: Example A-Pillar mount installation

- After alignment, you should fix the Camera with two screws and make sure all cables inside the A pillar are not damaged by the screw.
- Normally, those two screws are not in the same vertical position.

Please ensure correct alignment of the Camera.

Correct installation, clear view of Driver with no obstructions

Incorrect, obstruction by steering wheel/hands

Incorrect, Seatbelt cannot be seen

Figure 25: Examples of correct and incorrect A-Pillar Mount installation

3.5 InCab Camera Installation

Install the InCab camera in place according to the system installation diagram (section 3).
The InCab camera is used to provide full inside view of the vehicles cabin.

Figure 26: InCab Camera

Install the InCab camera inside the driver cab, (see example below)

Figure 27: InCab View.

3.6 Antenna Installation

3.6.1 GPS Antenna Installation

The GPS module must be installed horizontally forward. Show as below the image.

- if it is impossible to keep the antenna horizontal, the slant angle of antenna should not exceed 20 degrees.
- Must be placed in the opposite corner from Driver Camera.
- To guarantee the GPS antenna is working properly, it is very important to make sure there are no cover over the GPS antenna.

Figure 28: GPS Antenna.

3.6.2 Installation of 4G antenna (Only applicable for External antenna users)

1. Insert the cable extension of the 4G antenna into the roof panel.
2. 4G-M(Main) always required.
3. 4G-D is optional, reduce reception can be expected when omitting D.
4. Place the 4G antenna on the right side of the Main unit, close to the roof of the car.

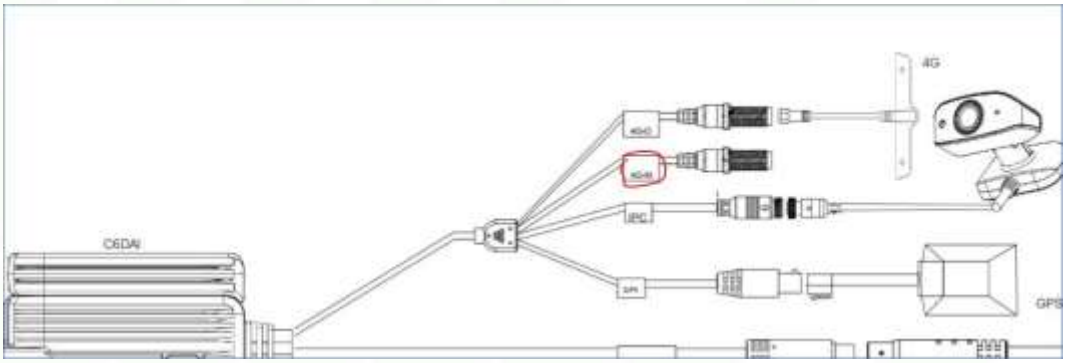

Figure 29: identifying the 4G Antennas.

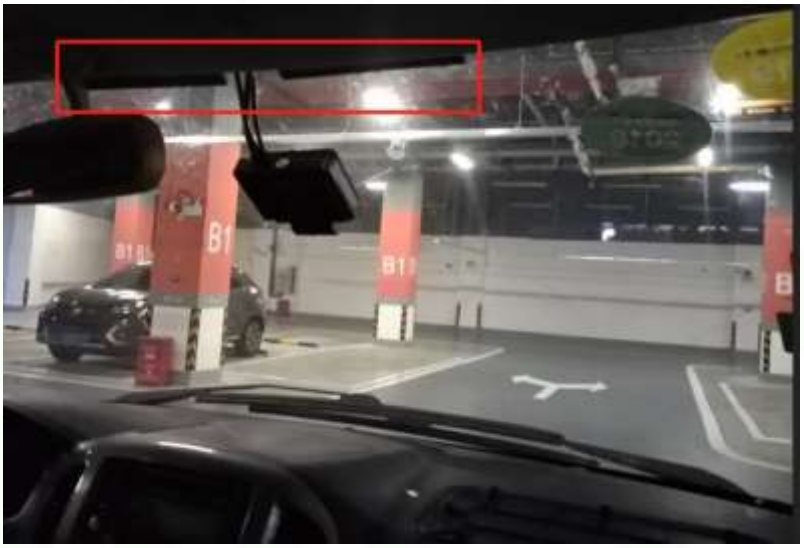

Figure 30: Installing the 4G Antennas.

Important: Ensure installation position does not obstruct the driver´s view and does not affect other electronic equipment.

4 Configuration & Calibration

The “Veyes” app must be used for Installation and calibration process.

Scan the QR code below to download the smartphone APP “Veyes” for accessing the Device settings.

IOS(Apple Store)

Android（Google Store）

Figure 31: QR Codes to download the Veyes APP.

4.1 Connecting to MiX Vision AI unit via App

1. Connect your mobile phone to the Wi-Fi of the C6D-AI

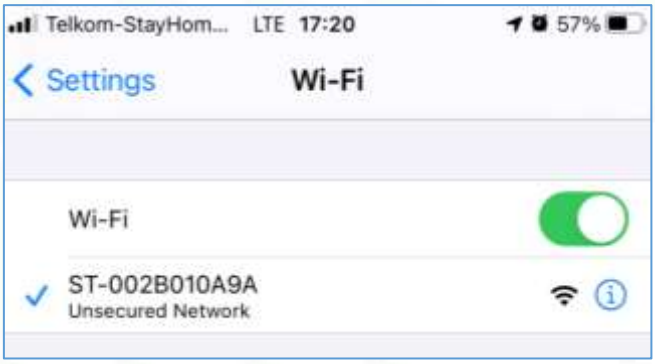

Figure 32: connecting to the main unit´s WiFi hotspot

NOTE: the Wi-Fi name of the unit will be ST_xxxxxxxxxx (example: ST-002B010A9A) where the xxxxxxxx refers to the device’s internal serial number.

2. Launch the app on your mobile, Enter the username and password and press **Login.** Two user levels are available:
    a. Admin Level (full access): **admin / admin**
    b. User Level (calibration only): **user / user**

Figure 33: Veyes login interface

4.2 Basic Configuration

4.2.1 Device Time Setup (Required)

The device time needs to be setup correct to ensure videos are downloading correctly. There are two time zone settings on the unit.
On the Veyes App, go to **Preferences** > **Basic Setup** > **Time Setup** and enter the
Time Zone = UTC (Coordinated Universal Time) ***Must be set to UTC and not other time should be used!***
Local TimeZone = your local time zone, this will also update the video overlay.

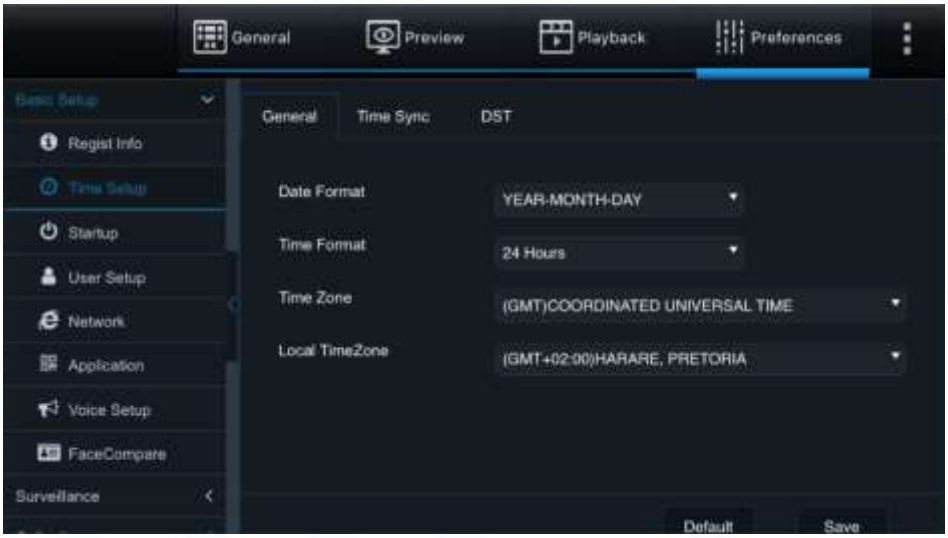

Figure 34: Time Setup.

4.2.2 APN Setup (If Required)

Enter the APN details of the SIM Card you intend to use. Default is “internet”
On the Veyes App, go to **Preferences** > **Basic Setup** > **Network** > **Communication Module** and enter the APN and user details.

Figure 35: APN Setup.

4.2.3 Change server address (If Required)

The device will be preprogramed with the server address from the factory. In some cases, it would be needed to change this if you want to move the device to a different datacentre.
On the Veyes App, go to **Preferences** > **Basic Setup** > **Network** > **Server Setup** and enter the Server DSN and Port details.

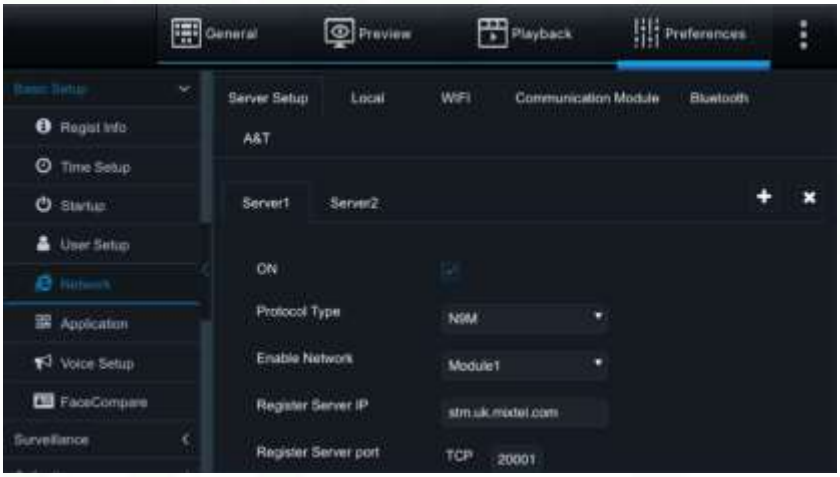

Figure 36: Server Address Setup.

Server Overview:

Environment	Device DNS	Device IP	Device Port
ZA	stm.za.mixtel.com	54.73.65.2	20001
ENT	stm.ent.mixtel.com	54.73.65.2	20001
UK	stm.uk.mixtel.com	54.73.65.2	20001
AU	stm.au.mixtel.com	54.66.243.58	20001
US	stm.us.mixtel.com	3.88.79.203	20001

4.2.4 Recording settings (Required)

You need to ensure that the recording settings are correct.
Config > Surveillance > Record > General

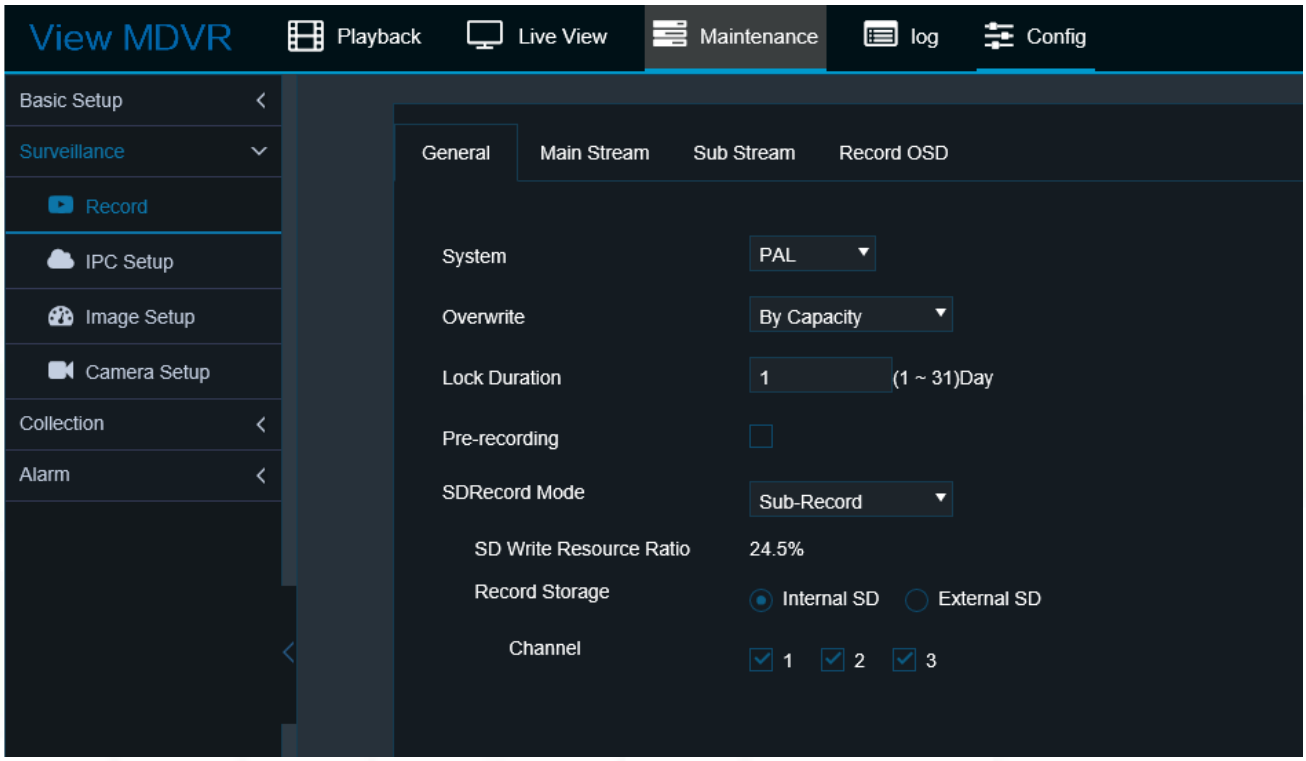

Figure 37: Recording Settings.

Section	Setting	Description
System	**PAL** NTSC	All units to be set to PAL and not NTSC
Overwrite	By Days **By Capacity** By Minutes Never	By Capacity to be used, the System will always keep about 1GB data free on the SD card for file handling.
Lock Duration	1	Do not use this function. If you enable LOCK function, you will reduce the video storage capacity.
Pre-recording	disabled	
SDRecord Mode	**Sub-Record** Mirror Record Alarm Backup Loop-Record	Sub-Record to be used. All other settings will not store SD video on SD2 and then you will not get event videos on MFM.
SD Write Resource Ratio	%	Auto calculated based on SD card size and resolution settings
Channel	Enabled	All channels that are used needs to be enabled, if disabled video will not be saved or available to view

4.2.5 Audio Recording Setting

Depending on local regulations, recording the audio inside the cabin is not allowed (privacy). To enable / disable the audio recording it is necessary run two steps:

1. Go to Config \ Surveillance \ Record and select the **Main Stream** tab. Change the option in the Audio Column to "**Always Audio**" or "**No Audio**", according to local rules. It is necessary to do the configuration for each camera, individually.

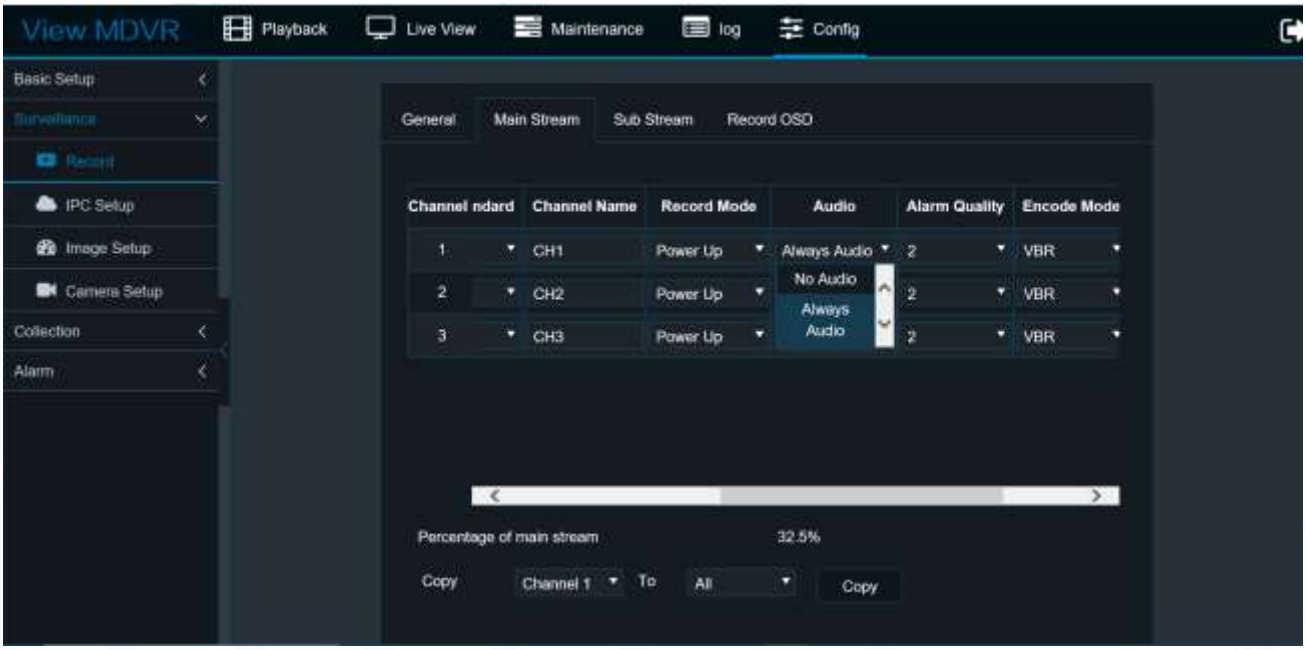

Figure 38: Audio recording setting – Main Stream

2. Go to Config \ Surveillance \ Record and select the **Sub Stream** tab. Change the option in the Audio Column to "**Always Audio**" or "**No Audio**", according to local rules. It is necessary to do the configuration for each camera, individually.

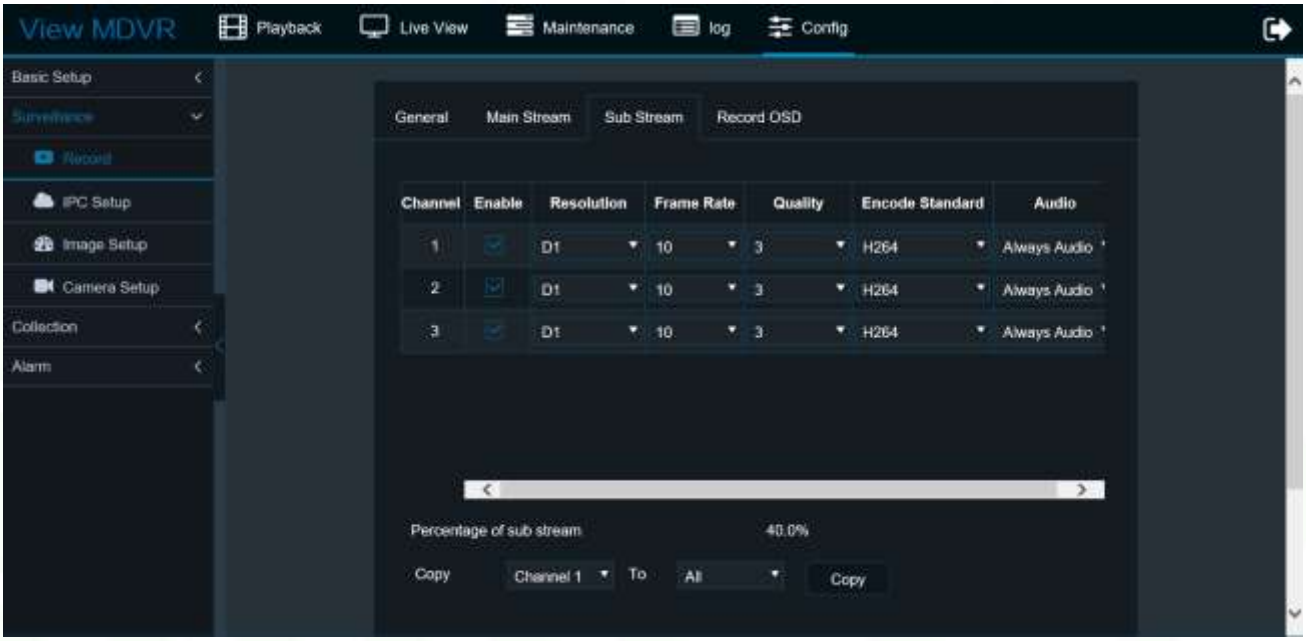

Figure 39: Audio recording setting – Sub Stream

4.2.6 Voice Setting

There are two Voice settings which may be required during the initial configuration:

1. Voice Volume: to increase/decrease the voice volume, got to Config \ Basic Setup \ Voice setup and enter the required volume (0-63).

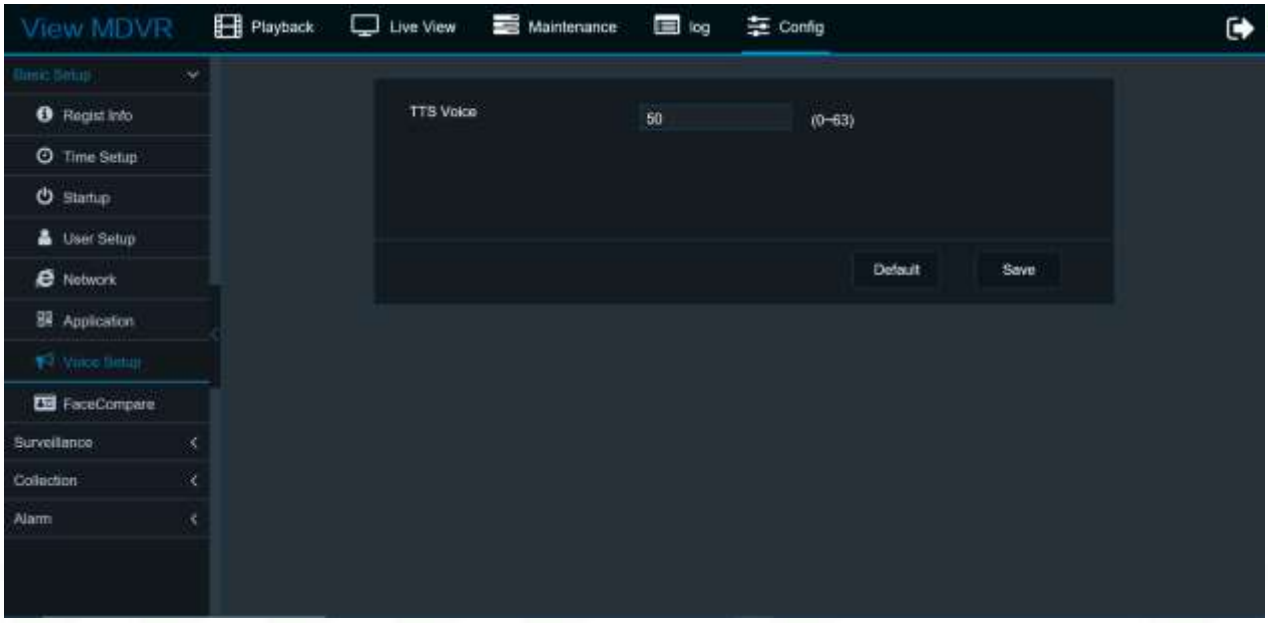

Figure 40: Voice Volume Setup

2. Enabling/disabling the alarm audio messages: sometimes, the customer requires that audio messages should not be played (only warning beeps should be played). To enable/disable the audio messages go to Config \ Alarm \ AI API and select the Algorithm Tab. Set the option AI Alarm Voice Enable as desired.

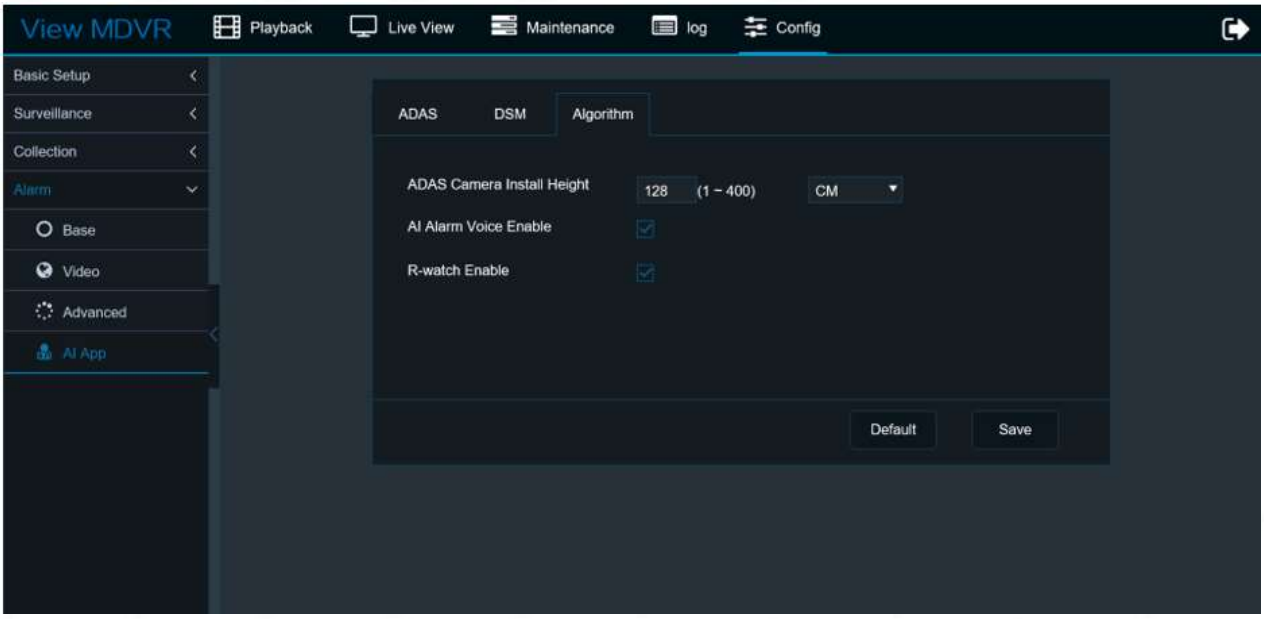

Figure 41: Enabling/Disabling the Alarm Audio Messages

4.3 Road Camera Calibration

1. With the App open, go to **Preview** and select **AI Calibration.**

Figure 42: Select AI Calibration.

2. Select the ADAS Calibration option.

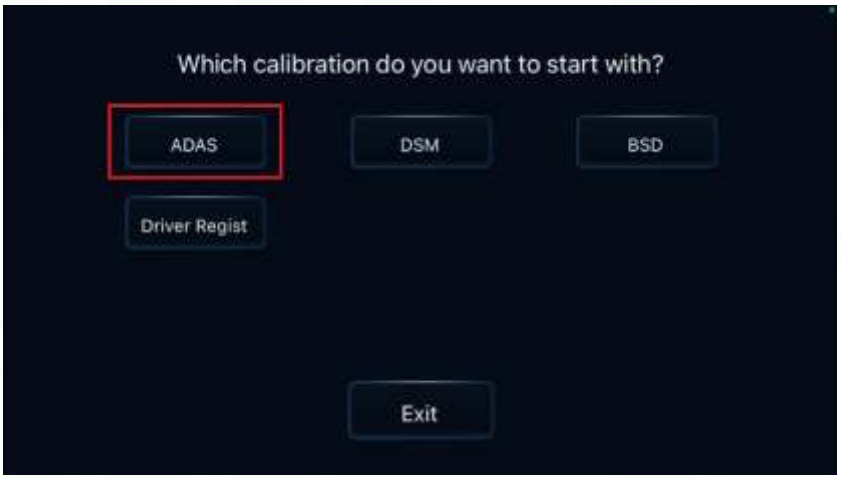

Figure 43: Select ADAS Calibration.

3. Ensure correct camera is selected (1) and press **Calibration.**

Figure 44: Select the front camera.

4. Answer the questions on and press **Next.**

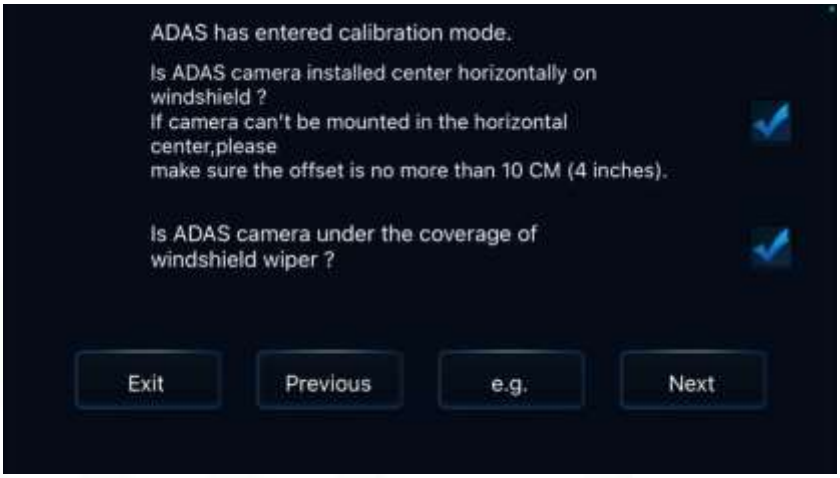

Figure 45: Answers the questions about the camera installation.

5. Enter the height of the Camera installation from the ground as per section 3.3.3.

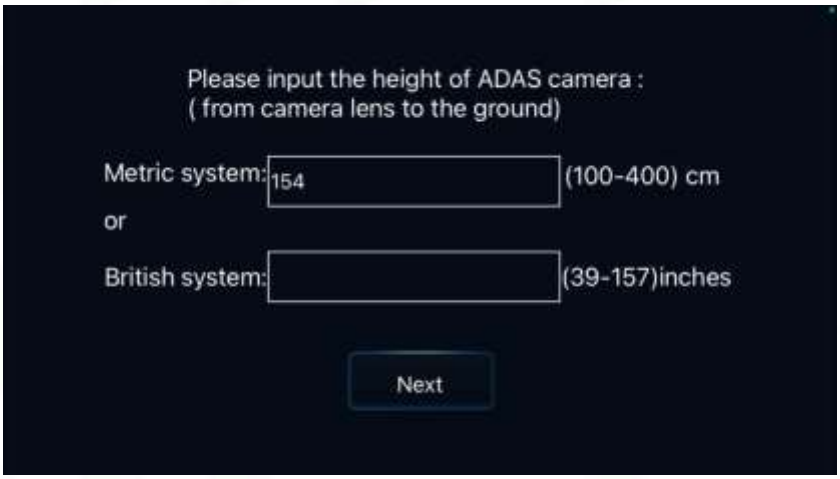

Figure 46: Entering height from the ground.

6. Press Next or review ADAS calibration instructions.

Figure 47: Entering calibration.

7. Adjust the lens angle of ADAS, so that the 30-meter horizontal line showed on the calibration screen coincides with the C-point 30 meters on the ground. Press next.

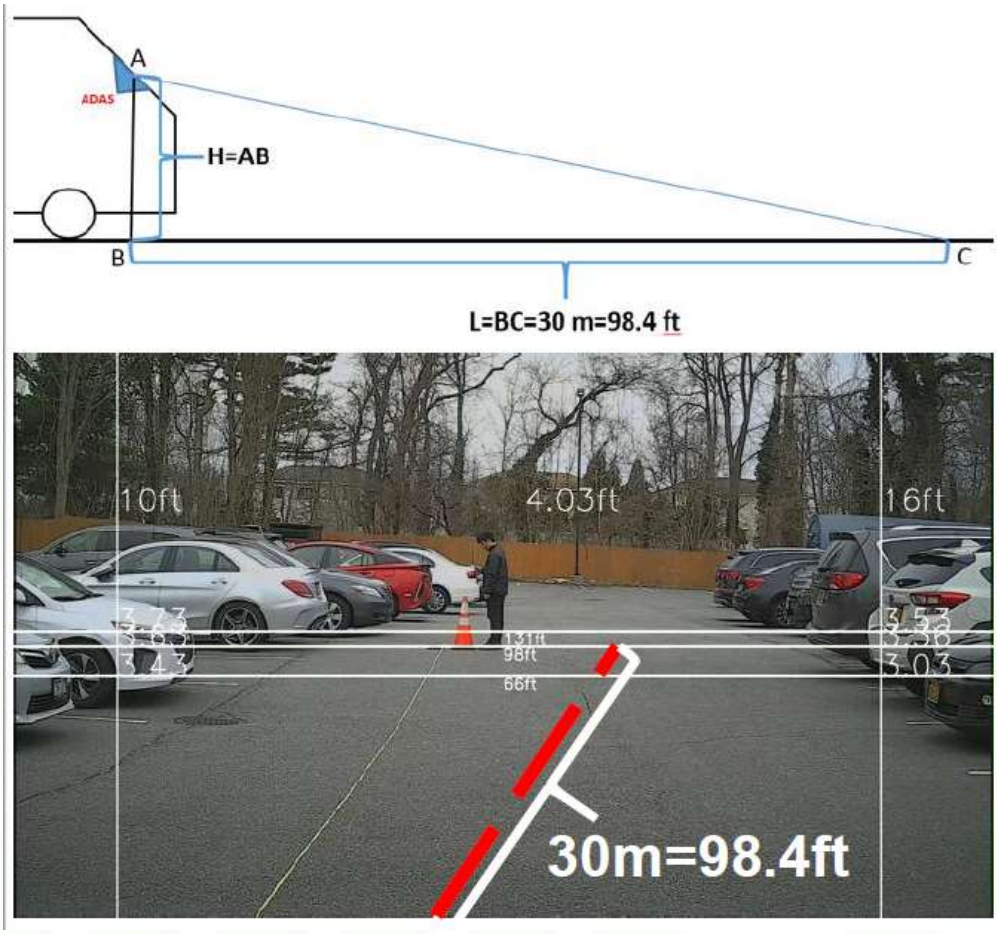

Figure 48: Road Camera calibration.

8. Select Yes, to exit ADAS calibration and select the speed source and setup Indicators if used.

Two speed sources are available: Satellite and Pulse (OBD is not yet supported). If Pulse is selected, an additional calibration procedure is required (see section 4.4).

Select which IO lines are connected with the right/left turn indicators signals and select the turn signal type (“Pulse Source” or “Source Voltage”).

a. Pulse Source = Signal received by device is a pulse signal (pulsating)
b. Source Voltage = Signal received by the device is a level signal (on/off)

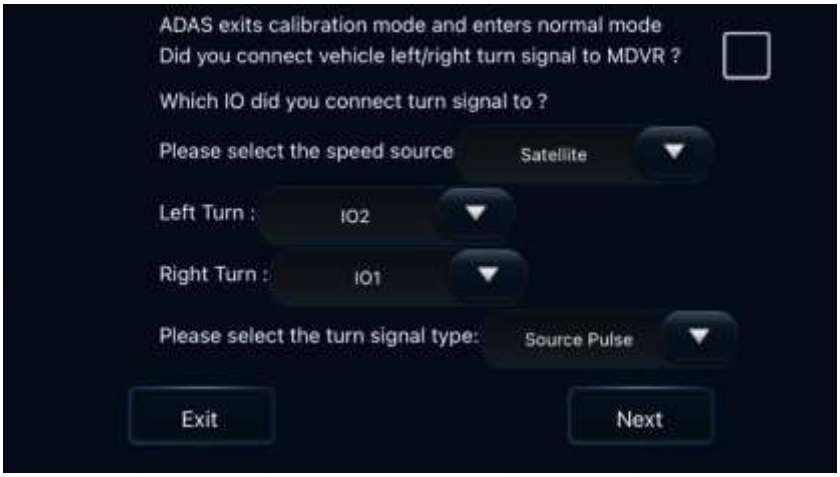

Figure 49: Configure Left/Right turn indicators.

9. Test Left Signal to ensure ON is detected

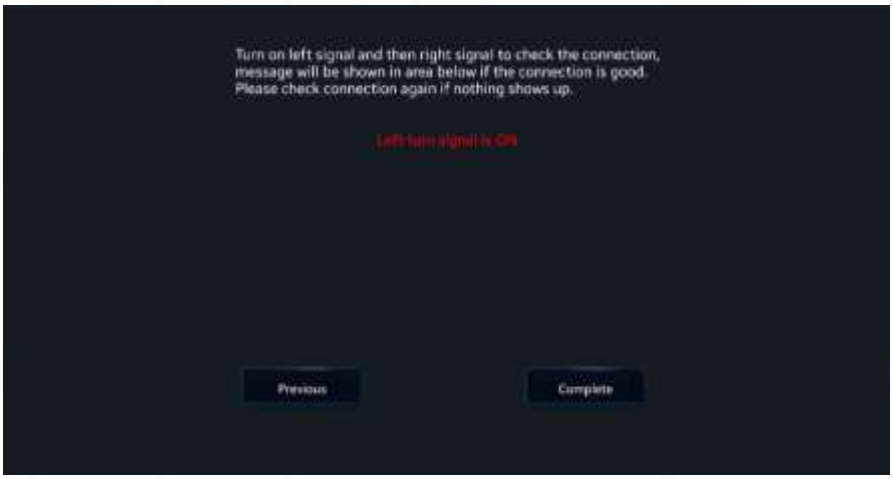

Figure 50: Testing left turn signal.

10. Test Right Signal to ensure ON is detected

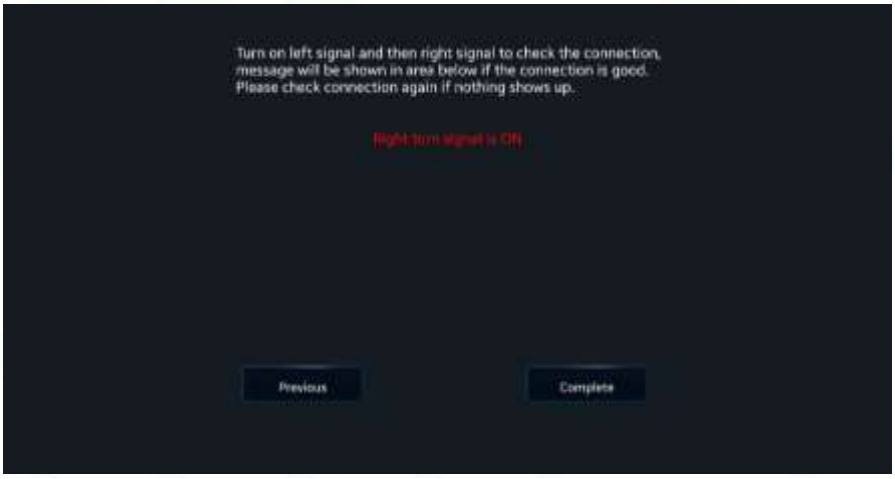

Figure 51: Testing right turn signal.

11. In case the turn signal test is not successful, go back to step 8 and check the signal type (pulsed or by level) and if the I/O selection is correct.

4.4 Driver Camera Calibration

For Driver Camera Calibration you need to select the appropriate option based on the camera type: Dash mount Camera (**Front** option) or A-Pilar camera (**Side** option).

1. With the App open, go to **Preview** and select **AI Calibration**

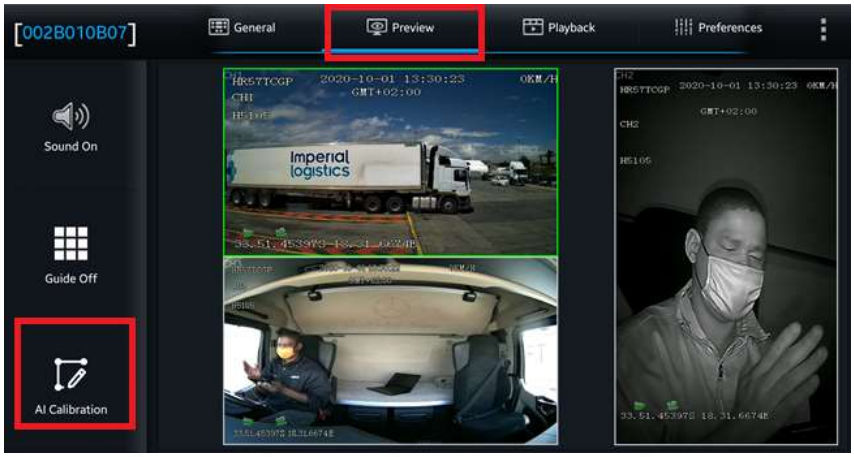

Figure 52: Select AI Calibration.

2. Select the DSM Calibration option

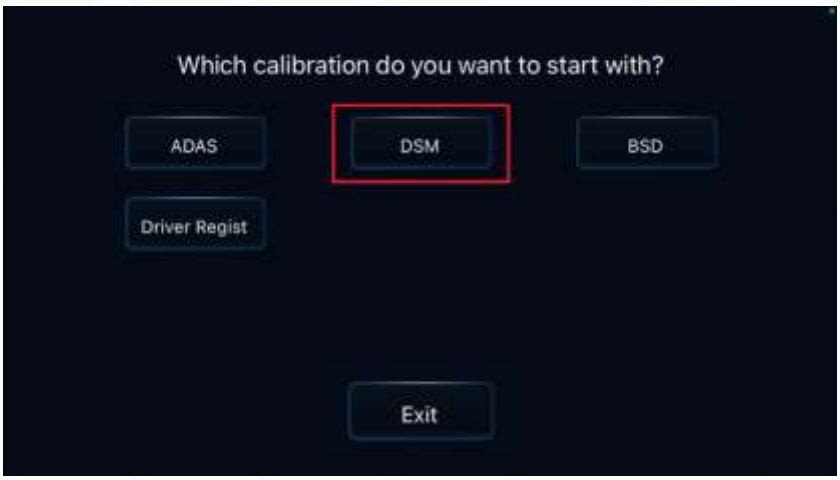

Figure 53: Select DSM (Driver Camera) Calibration.

3. Ensure correct camera is selected (2) and press **Calibration**

Figure 54: Select correct camera.

4. Review installation guidelines and press **Next**

Figure 55: Installation guidelines.

5. Select Driver camera location (Front/Side) as per section 3.4.1 and select **Next**

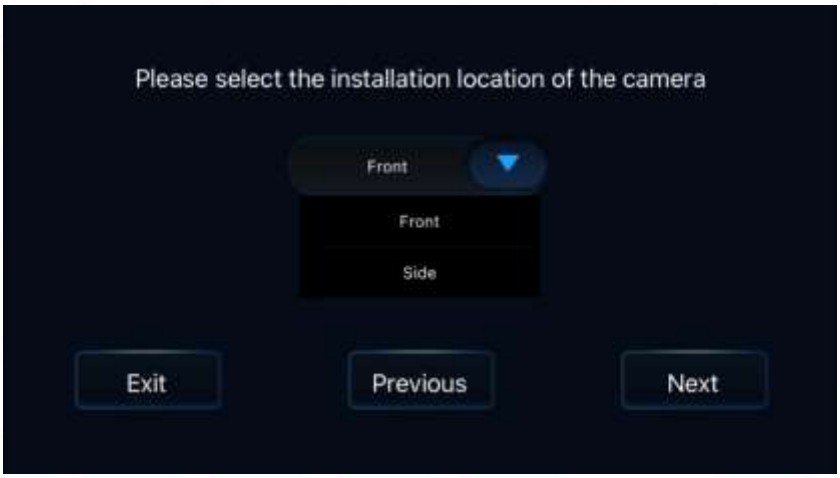

Figure 56: Select Driver Camera type.

6. During Calibration the driver' s eyes should look straight ahead. For **Front** mounted calibration in order to get **CALIBRATION_TRUE** to show, the **calibrate: xx/50** score needs to be **51/50**. Press **Calibration** to complete calibration process.

Figure 57: Driver camera calibration (Dash Mount).

7. For **Side** mounted calibration, the display must show **calibrate_true!** and **num:301,x,x,300. P**ress **Calibration** to complete calibration process.

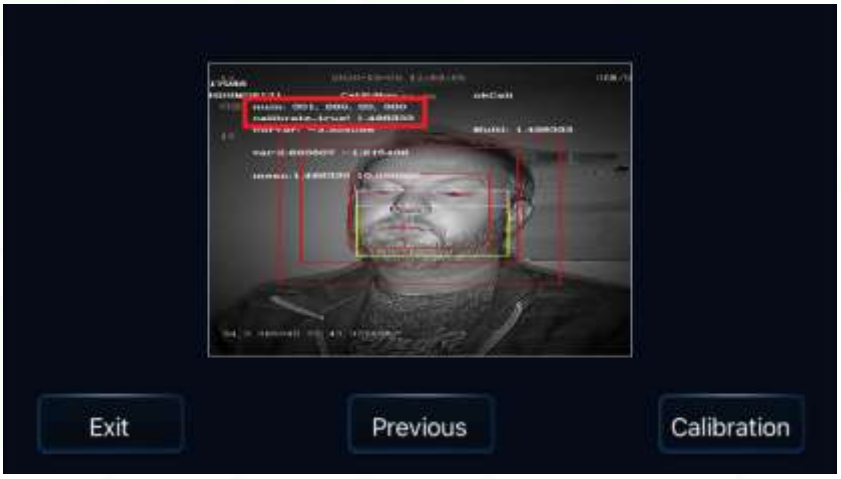

Figure 58: Driver camera calibration (A-Pillar Mount).

4.5 Speed Calibration

If the speed source option selected in section 4.2 is **Pulse**, an additional calibration procedure will be required.

Using the Veyes App, go to Preferences \ Collection \ General and select the Speed Tab.

Choose "Pulse" as the Speed Source and choose Input Manually as Calibration Mode.

Input manually requires driving the vehicle for a distance (ex: 1 km), pressing **Start** at the beginning and **Finish** when reaching the defined distance. It is then necessary to input the travelled distance (in km) in the field beside the Calculate button and press it. The device calculates the number of pulses per km and uses it for calculating the vehicle´s speed. Press **Save**.

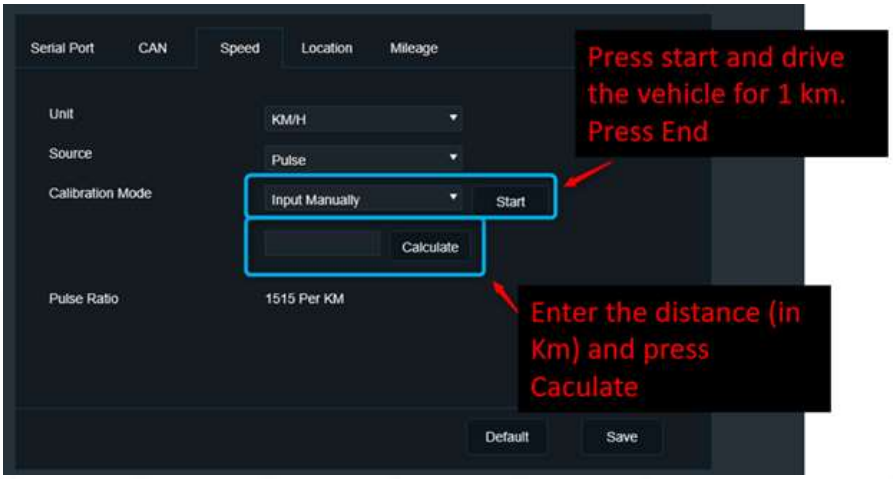

Figure 59: Speed Calibration.

5 MiX Fleet Manager Setup

This section will guide you through the steps required on MiX Fleet Manager.
There are two ways to setup the C6D-AI on MiX Fleet Manager:

- Standalone device (without an OBC)
- Paired with an OBC (FM3xxx, MiX4000, MiX 6000 or MiX 6000 LTE)

***Note**: the artificial intelligence (AI) algorithms that are used to detect these events are probabilistic in nature. While extensive testing has been done to ensure their reliability, there is no guarantee that they will be 100% accurate.*

5.1 MiX Vision AI Standalone Setup

5.1.1 Enable Standalone Mobile device

When making use of a complete standalone solution you need to enable the Streamax Standalone mobile device.

- Click Manage.
- Under Config admin, click Libraries.
- Click on the Mobile Device library tab on the left.
- Search for the Streamax Standalone device.
- Click the downwards action arrow next to the device.
- Select Make available.

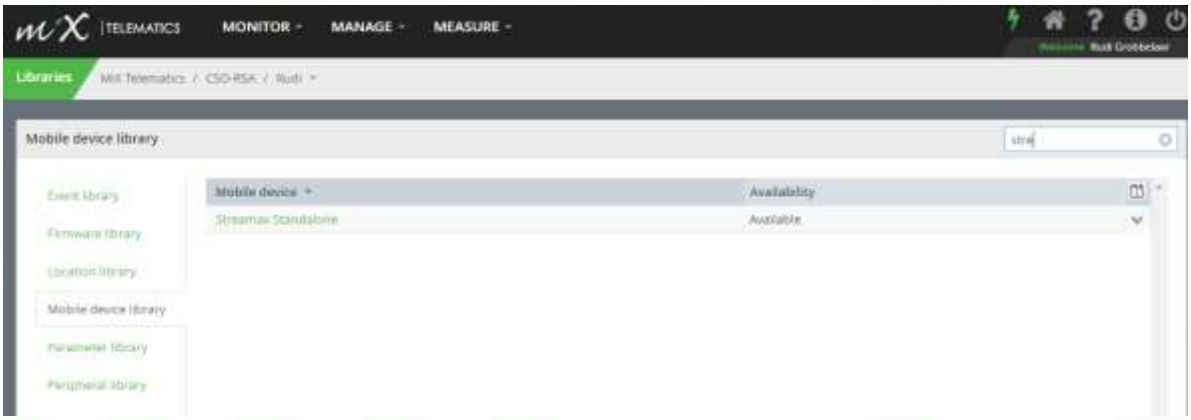

Figure 60: Make Streamax Standalone Mobile Device available.

A default Mobile device template and event template will be created.

5.1.2 Make the Peripheral device available

The MiX Vision AI (C6D-AI) device is listed in the peripheral.

- Click Manage.
- Under Config admin, click Libraries.
- Click on the Peripheral library tab on the left.
- Search for the ***Streamax C6D-AI*** device.
- Click the downwards action arrow next to the device.
- Select Make available.

Figure 61: Make Streamax Standalone Peripheral Library available.

5.1.3 Make AI events available on your organization

The MiX Vision Events will automatically be made available as soon as the peripheral is enabled.

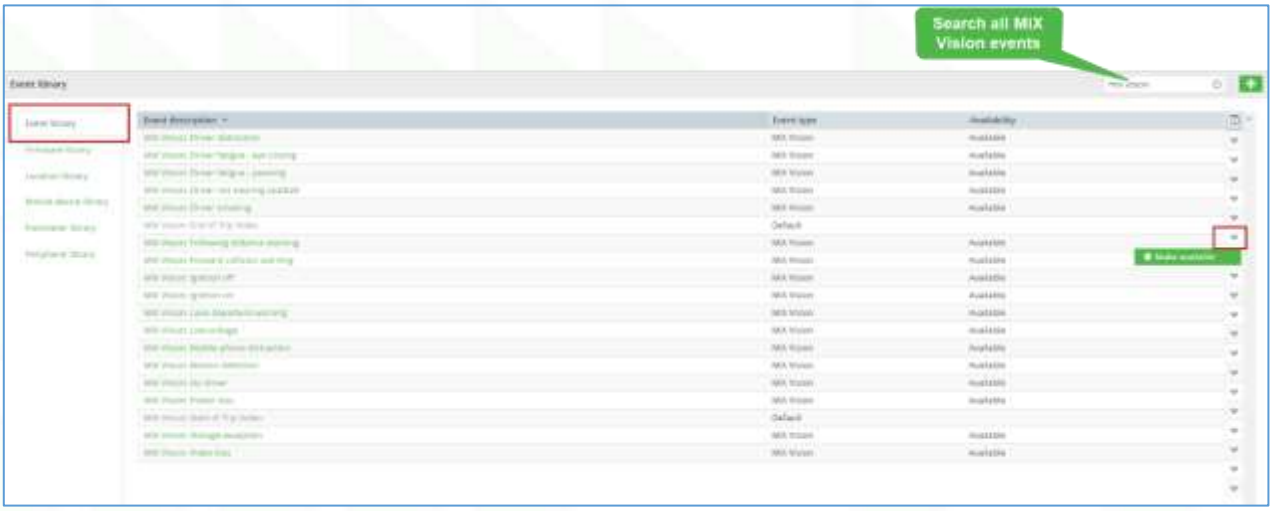

Figure 62: Make Ai events available - Standalone.

5.1.4 Connecting to the mobile device template (Standalone)

The MiX Vision C6D-AI device must be connected on the mobile device template. It is connected to the **SP** line, which is the connection for the new **Standalone** peripheral type.

- Click Manage.
- Under Config Admin, click Templates.
- Click on the Mobile device templates tab on the left.
- Select "*Default mobile device template for Streamax Standalone*"
- Click on SP line.
- By default the Streamax C6D-AI device will be populated, if not click on it to change

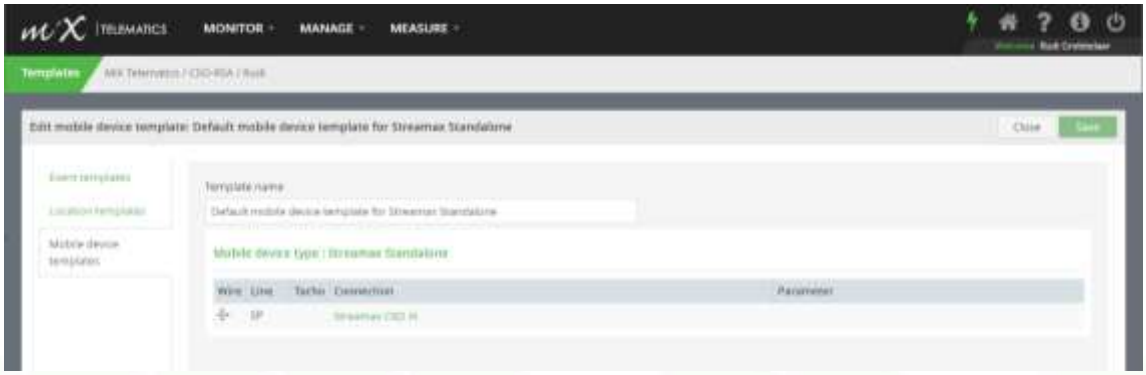

Figure 63: Connecting to the device template.

5.1.5 Link device serial to your asset

When an asset is added to a configuration group with a connected C6D-AI peripheral, the details automatically appear on the asset's mobile device settings tab.

The MiX Vision C6D-AI 10-digit serial number can be entered in the input box. This number is printed on the label of the C6D-AI device.

- Click Monitor.
- Under Fleet Admin, click Assets.
- Search for the relevant asset and click the green asset description link to edit the asset details.
- Click on the Mobile device settings tab on the left.
- Enter the 10 digit Streamax serial number in “Mobile device serial number” field.
- Save and exit

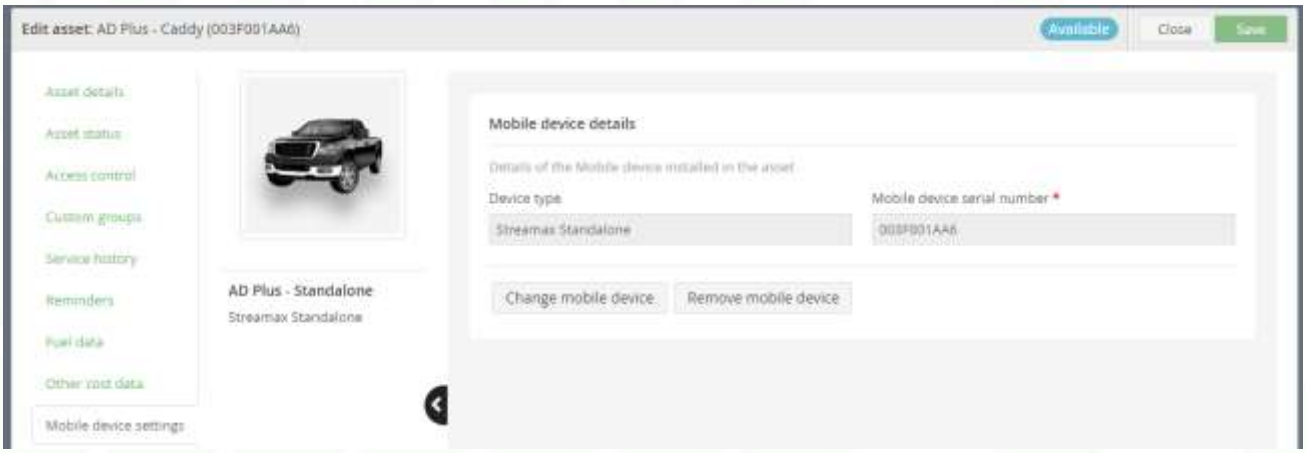

Figure 64: Entering Streamax serial number

5.2 MiX Vision AI with OBC setup

5.2.1 Make the Peripheral device available

The MiX Vision AI (C6D-AI) device is listed in the peripheral library.

- Click Manage.
- Under Config admin, click Libraries.
- Click on the Peripheral library tab on the left.
- Search for the ***Streamax C6D-AI*** device.
- Click the downwards action arrow next to the device.
- Select Make available.

Figure 65: Make Peripheral Library available.

5.2.2 Make AI events available on your organization

The MiX Vision Events will automatically be made available as soon as the peripheral is enabled.

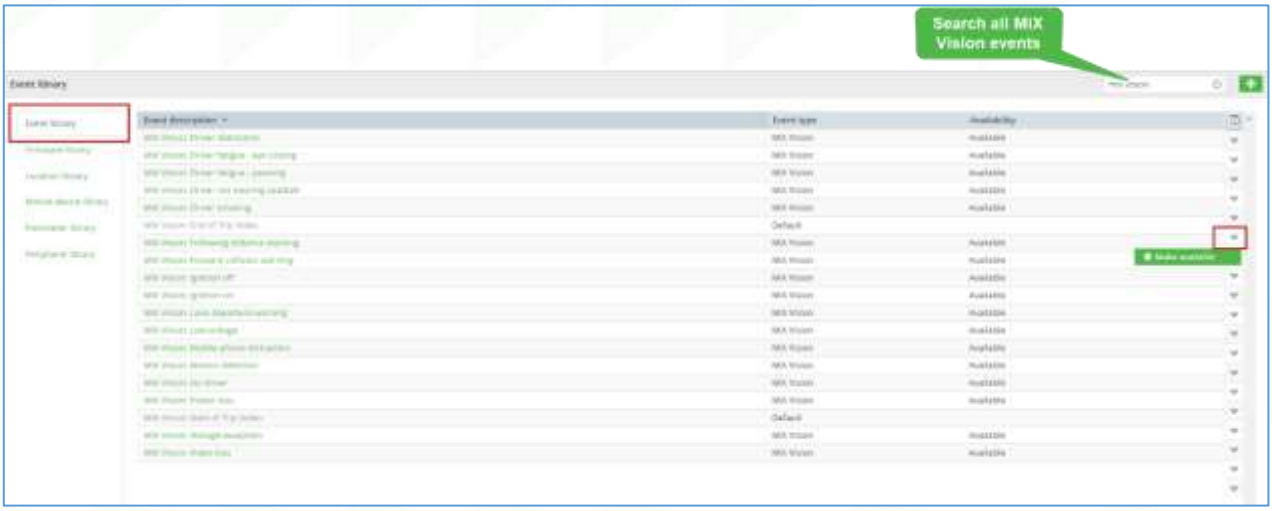

Figure 66: Creating video events.

5.2.3 Connecting to the mobile device template (OBC)

The MiX Vision C6D-AI device can be connected on the mobile device template. It is connected to the **SP** line. This type indicates that there is no direct communication between the camera unit and the on-board computer.

- Click Manage.
- Under Config Admin, click Templates.
- Click on the Mobile device templates tab on the left.

- Search for the relevant mobile device template in the list.
- Scroll down to the line connections and look for the SP line.
- Click on "not connected".
- Select the Streamax C6D-AI (Standalone) device from the drop down list of peripheral devices.
- Click Save.

Note: Only the MiX 4000, MiX 6000, MiX 6000LTE and FM units supports the C6D-AI device.

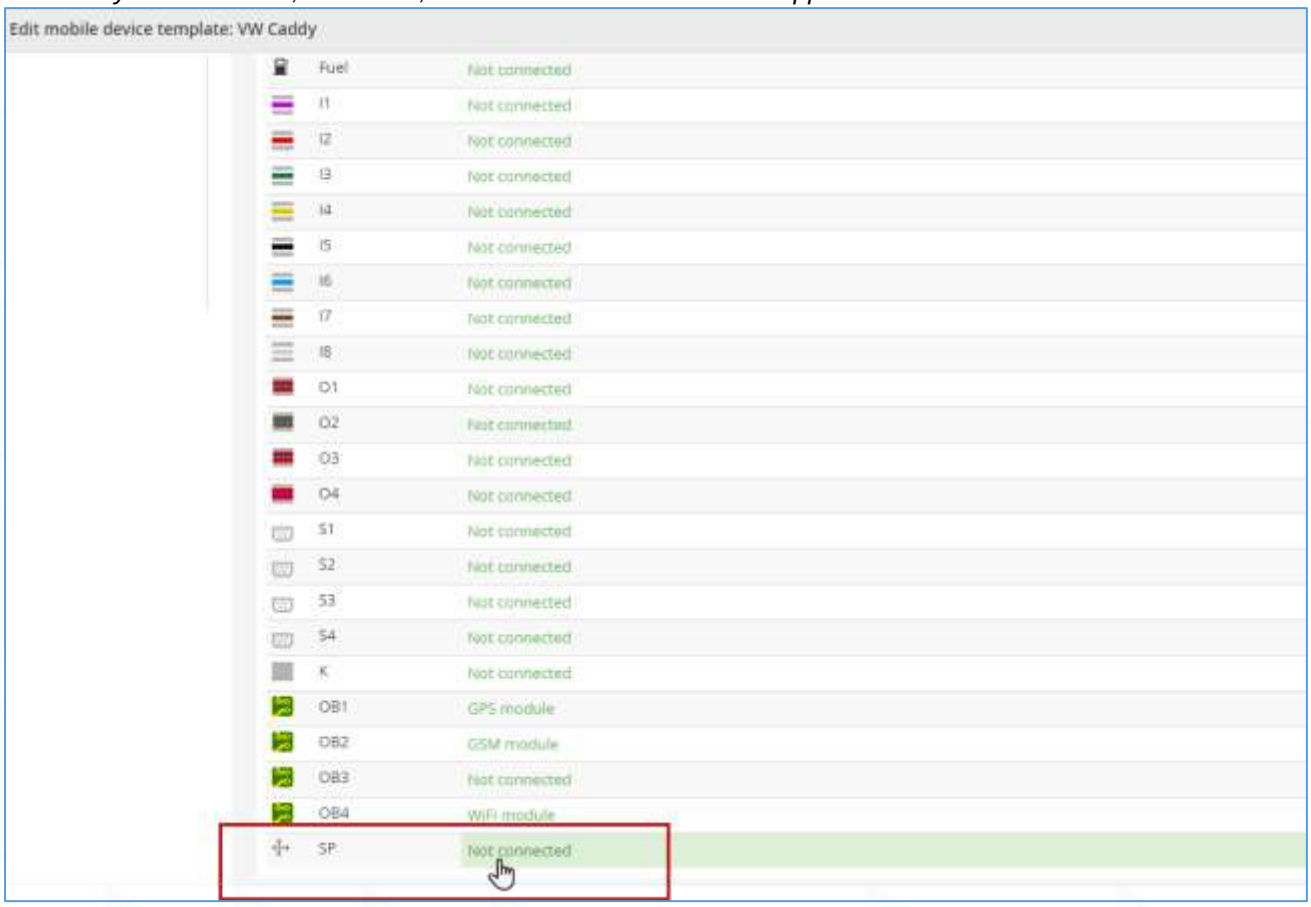

Figure 67: Configuring the mobile device template

5.2.4 Link device serial to your asset

Commission the MiX Vision AI device using the mobile device settings page for the specific asset.

When an asset is added to a configuration group with a connected C6D-AI peripheral, the details automatically appear on the asset's mobile device settings tab.

The MiX Vision C6D-AI 10-digit serial number can be entered in the input box. This number is printed on the label of the C6D-AI device.

- Click Monitor.
- Under Fleet Admin, click Assets.
- Search for the relevant asset and click the green asset description link to edit the asset details.
- Click on the Mobile device settings tab on the left.
- Scroll down to the Streamax details section and enter the 10 digit Streamax serial number.
- Click Save

Figure 68: Linking Device serial with the Asset.

Upon saving this information, the device is set to commissioned in MiX Fleet Manager and events that are configured to record video in the event template will then have video associated.

After commissioning the device, it will no longer be possible to edit the serial number, but the device can be changed or removed.

Please note, if a MiX Vision 1 script is associated to the mobile device template that is linked to the asset's configuration group, the MiX Vision C6D-AI details section will not be visible.

5.3 Record video for OBC events

You can enable video recording on a mobile device generated event in the event template on the event configuration page or on a specific event when using the MiX Vision AI device. This is only supported when the AD Plus is connected to a MiX OBC.

This is only available on Detailed and Notification events.

- Click Manage.
- Under Config admin, click Templates.
- Make sure Event templates are selected on the left.
- Search for the relevant template.

TIP: *If you are looking for the event template of a specific asset, go to the Configuration groups menu under Config Admin, search for the asset and scroll to the left to view the asset's mobile device template and event template. Clicking the template will take you straight to the template's settings.*

- Click the downwards arrow and select Edit.
- Scroll to the list of events that have been selected on the template (or select new events by clicking the Select events button.)
- Click on the green hyperlinked event, e.g. *panic button pressed*.

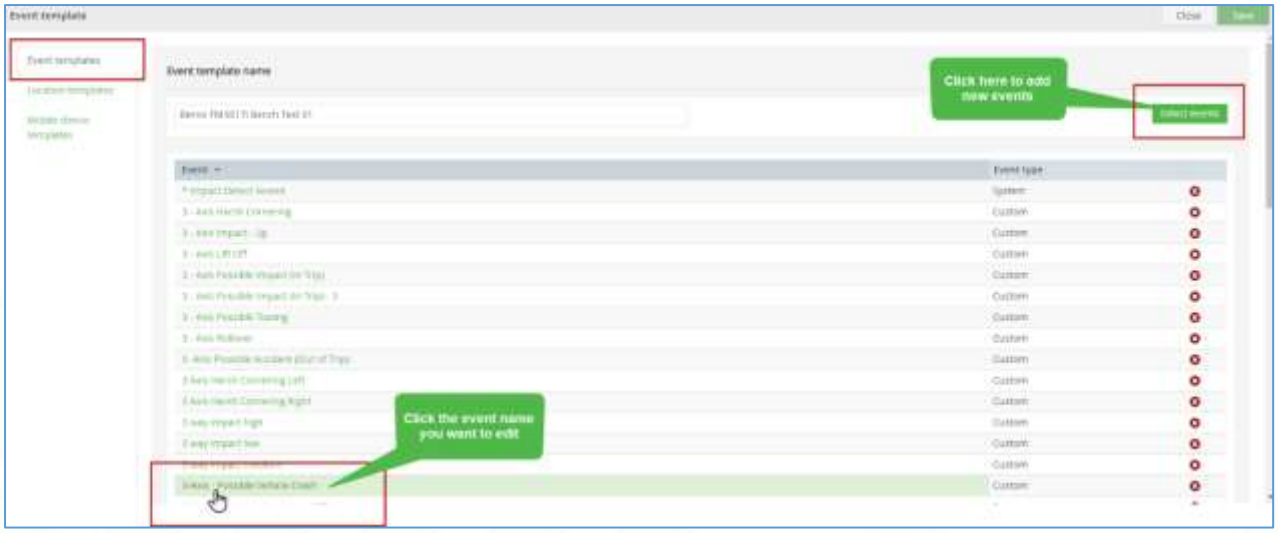

Figure 69: Adding and editing video events.

- Scroll down to the **Record** section.
- Enable recording of the event by checking the box next to Record event.
- Check the box next to Record video.
- Video recording cannot be enabled for summarised events
- Click Save

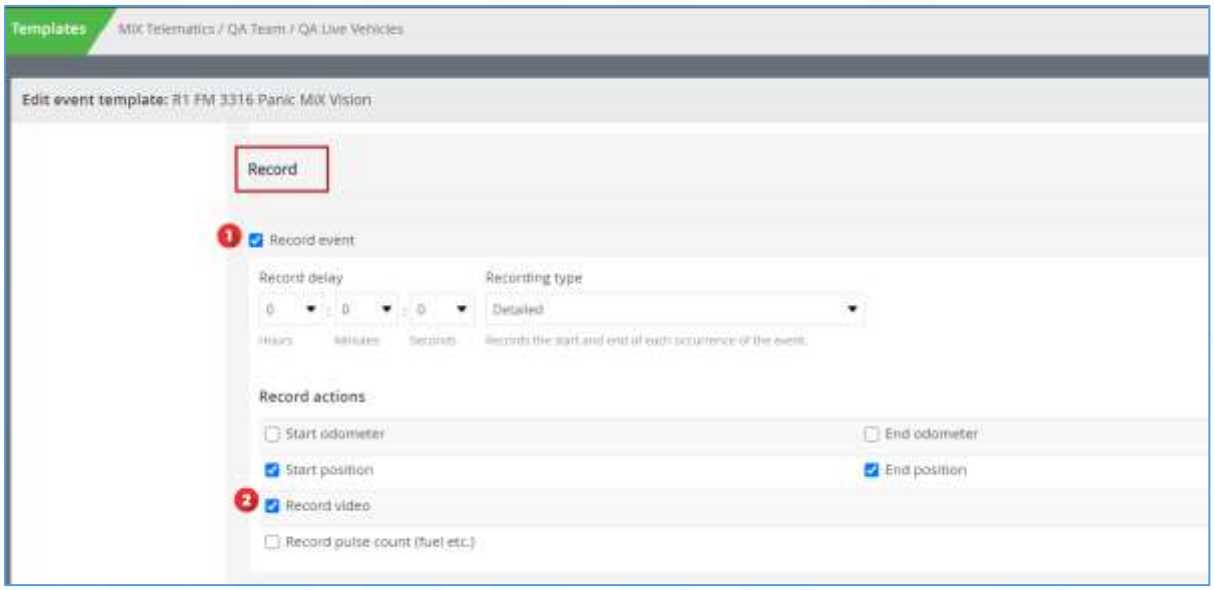

Figure 70: Saving Events.

The event needs to be compiled and uploaded to the OBC's configuration as it is mobile device generated using the compile config feature. When the **trip is processed** the video footage is retrieved from the C6D-AI server for the date and time that the event occurred and is then associated to the event in MiX Fleet Manager.

6 Advanced Settings

6.1 Standalone OBC settings

The MiX Vision AD Plus can be setup to generate the following OBC parameters:

- AVL rate
- Harsh Driving Events (Braking/Acceleration/Cornering)
- Overspeeding

6.1.1 AVL Rate

There are 3 sections that can be used for AVL rate on the device. By default, only Constant Upload (every 30s) and GPS Heading Change is used.

- Constant Upload Mode: Fixed Time and distance interval upload
- Variable Upload Mode: Speed based interval and distance upload
- GPS Heading Change: Angle deviation upload

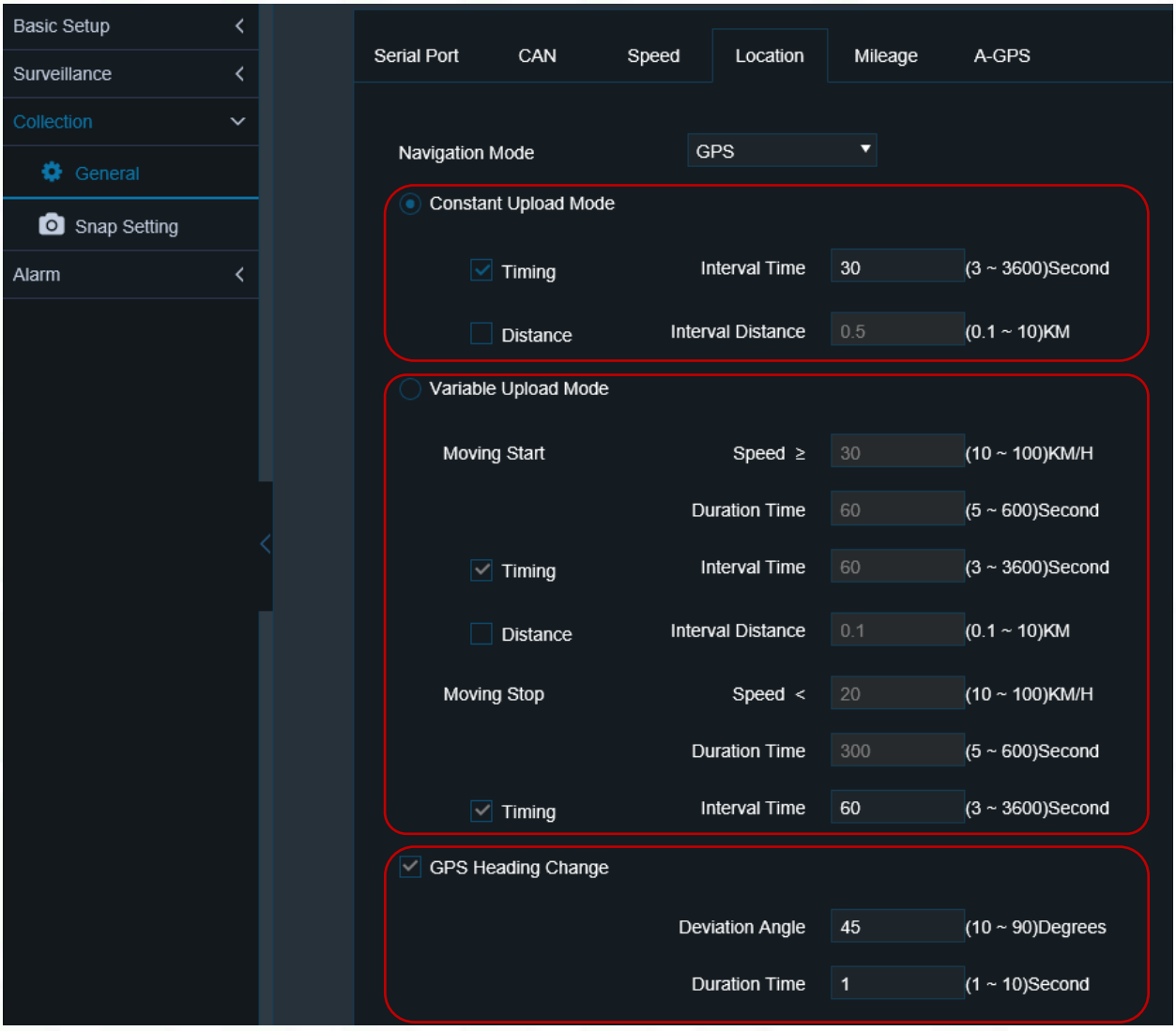

Figure 71: GPS Positioning Configuration – AVL Rate.

Section	Subsection1	Subsection2	Explanation
Constant Mode Upload	Timing		every x-seconds a position is sent
	Distance		every x-km a position is sent
Variable Upload Mode	Moving Start	Speed	Active above speed value
		Duration	Keep the condition for x seconds you will move to moving start/ moving stop/ deviation angle status
	Timing	Interval Time	every x-seconds a position is sent for "Moving Start Speed"
	Distance	Interval Distance	every x-km a position is sent for "Moving Start Speed"
	Moving Stop	Speed	Active below speed limit
		Duration Time	Keep the condition for x seconds you will move to moving start/ moving stop/ deviation angle status
	Timing	Interval Timing	every x-seconds a position is sent for "Moving Stop Speed"
GPS Heading Change	Deviation Angle		Angle deviation when a position will be sent
	Duration Time		Keep the condition for x seconds you will move to moving start/ moving stop/ deviation angle status

6.1.2 Harsh Driving Events (Braking/Acceleration/Cornering)

You can enable Harsh driving events via ***Config > Alarm > Advanced > Driver Behavior Alarm***

Figure 72: Harsh Driving Events.

100HZ: Check the 100HZ G-sensor value. ACC is two packages per second, 50 entries each package

Offset is the acceleration from the resultant force in a certain axis direction. If the acceleration in the direction is greater than this value, an alarm will be triggered

- Harsh Braking: negative value in the x-axis;
- Hard Acc: positive value in the x-axis;
- Harsh Left Turn: positive value in the y-axis;
- Harsh Right Turn: negative value in the y-axis;
- Effective Time: a time period during which a cleared alarm is triggered again. Alarms triggered in this period are considered the same.
- Speed is the range at which the algorithm will be active.

Note difference to MiX OBC i.e. accelerometer via GPS, which is more noisy so not directly comparable to a MiX OBC.

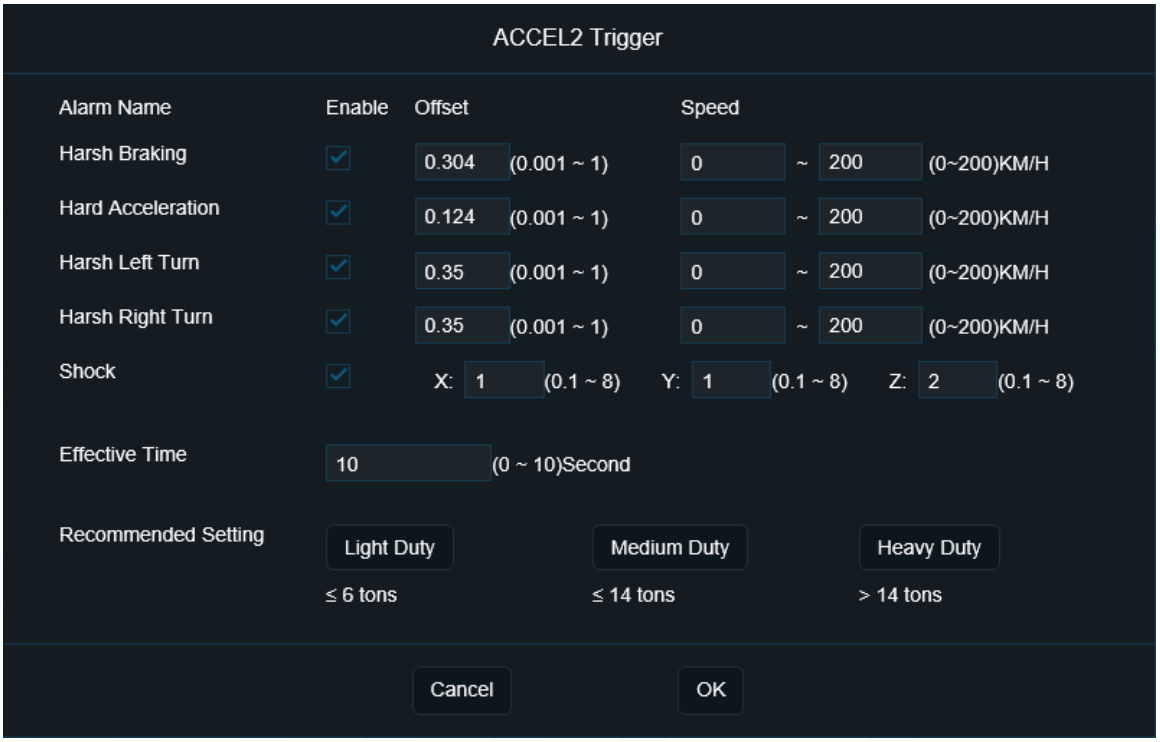

Figure 73: Harsh acceleration events settings.

Default Settings:
The recommended values can be set according to three types of vehicles: Light Duty, Medium Duty, and Heavy Duty. Tap the corresponding button and the recommended values will be filled in automatically.

Recommended Setting
The Light/Medium/Heavy Duty parameters shown below
A good starting point for Light vehicles in the last column "Custom"

Event	Light Duty	Medium Duty	Heavy Duty	Custom
Harsh Braking	0.5	0.4	0.4	0.304
Hard Acceleration	0.3	0.25	0.25	0.124
Harsh Left Turn	0.35	0.35	0.35	0.35
Harsh Right turn	0.4	0.35	0.35	0.35

6.1.3 Overspeeding

The combination of Speed and Duration is used to trigger the speed alarm, that is, when the speed exceeds the set speed for a certain period of time, it is considered as a speeding alarm.
Config > Alarm > Base > Speed Alarm

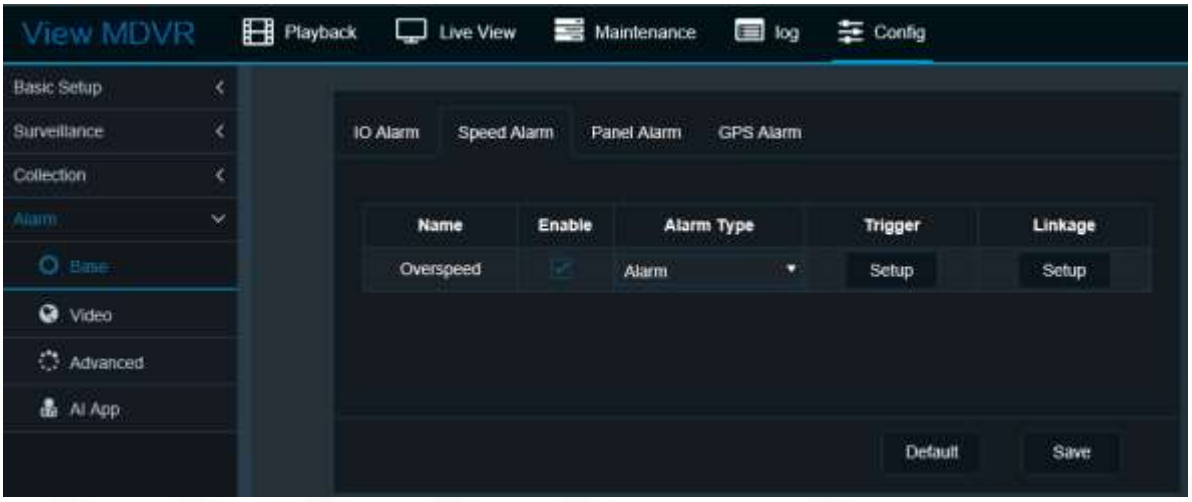

Figure 74: Over speeding Alarm.

Trigger Settings:

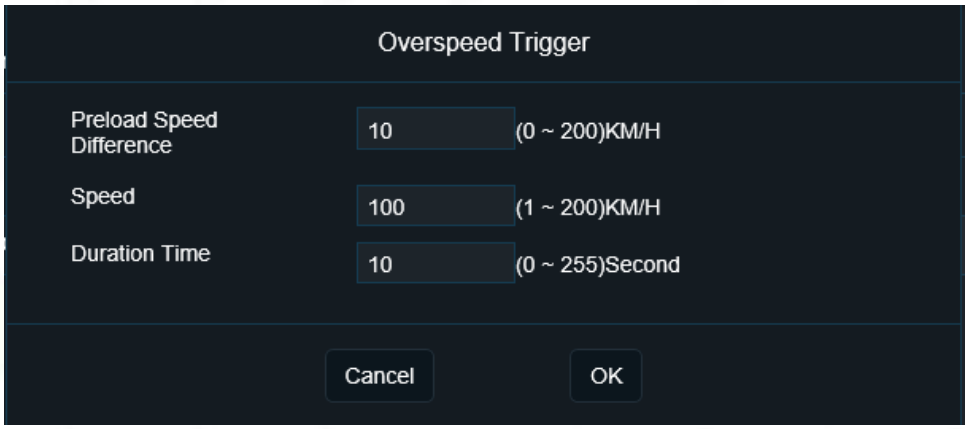

Figure 75: Over speeding alarm configuration.

- *Preload Speed Difference* is a value for speed warning. For example, the speed threshold is 100 and the warning speed difference is 10, when the speed reaches 90, a voice alarm will be triggered.
- *Speed*: Selected speed value to use.
- *Effective Time*: a time period during which a cleared alarm is triggered again. Alarms triggered in this period are considered the same and no voice or alarm will be triggered.

7 Log Your Work

Double check the installation quality and confirm there are no abnormalities.

- Check that the parameter settings have been saved and take a screenshot.
- Capture a video of the video image quality.

Take a picture of all the equipment and of the entire operation after installation is completed.

- Take a picture of all camera locations.
- Take a picture of cab after installation.

Photos and screenshots must be taken during installation for operations and maintenance tracking.

- Collecting Vehicle Information (Includes the appearance of the car, driving cockpit before installation, and vehicle information plate)
- Equipment location in cab after installation
- Position of the anchored Main unit and connected wiring
- Software version status
-

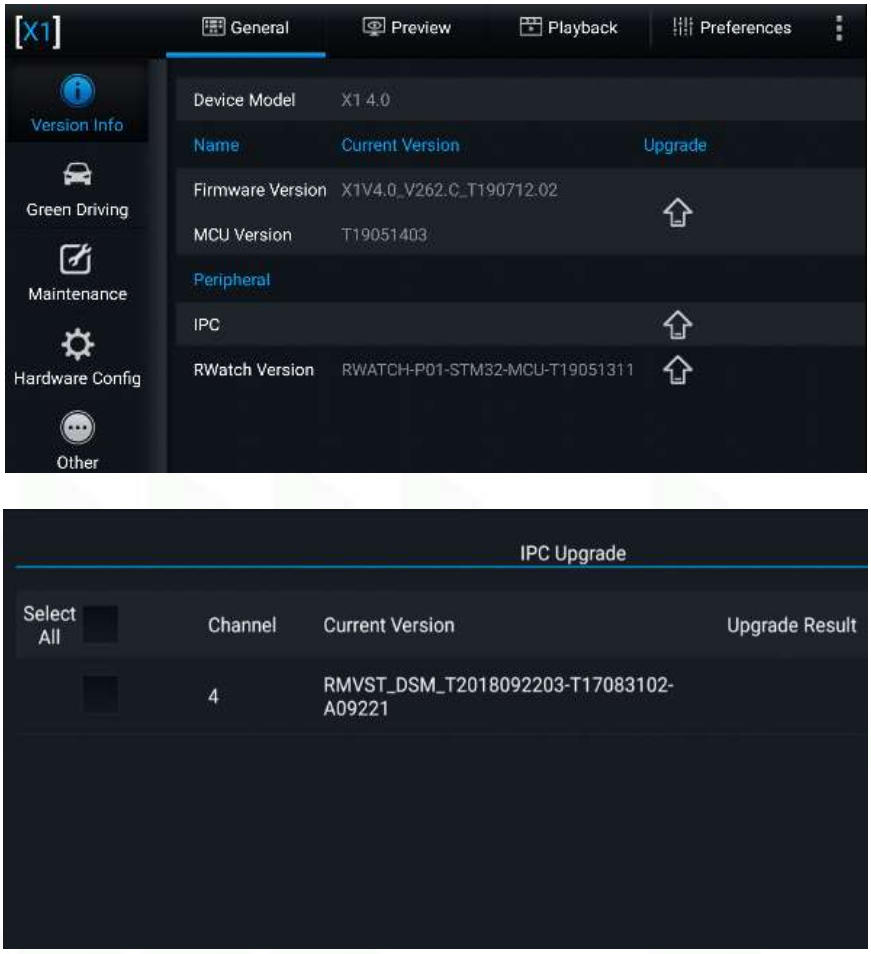

Figure 76: Software version Screenshots

Examples of screenshot showing Driver Camera during installation/Calibration

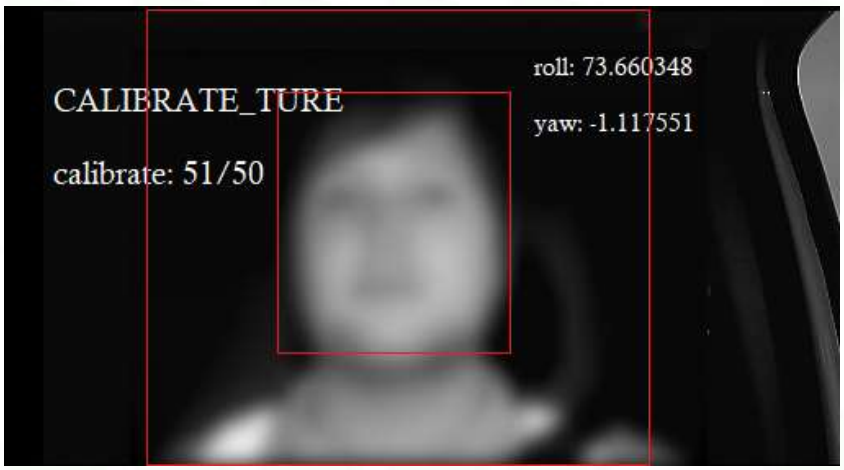

Figure 77: Screenshot of Driver Camera Calibration.

ADAS calibration interface

Figure 78: Screenshot of ADAS Calibration.

Speed source settings

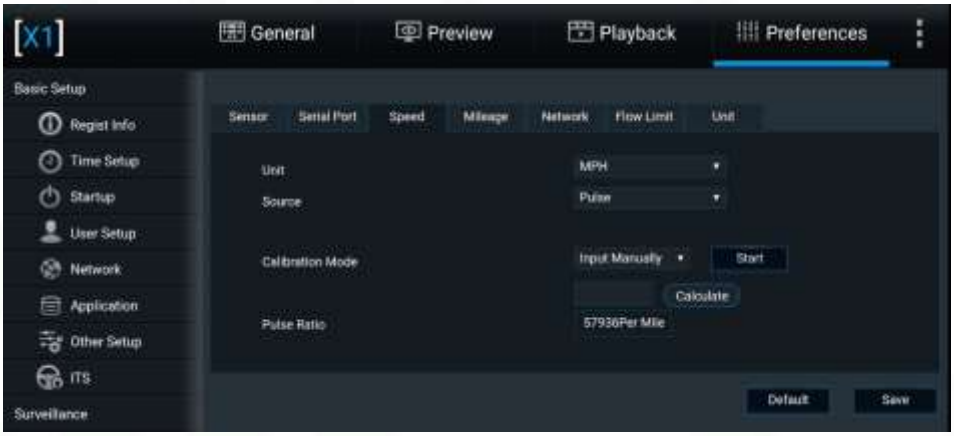

Figure 79: Screenshot of Speed Source Calibration.

Server connection status

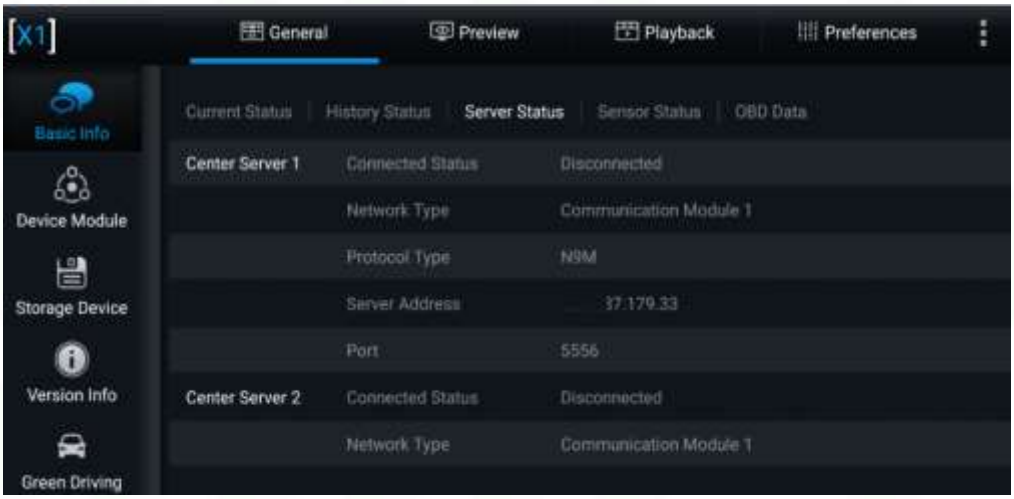

Figure 80: Screenshot of Server configuration and status.

Sensor status

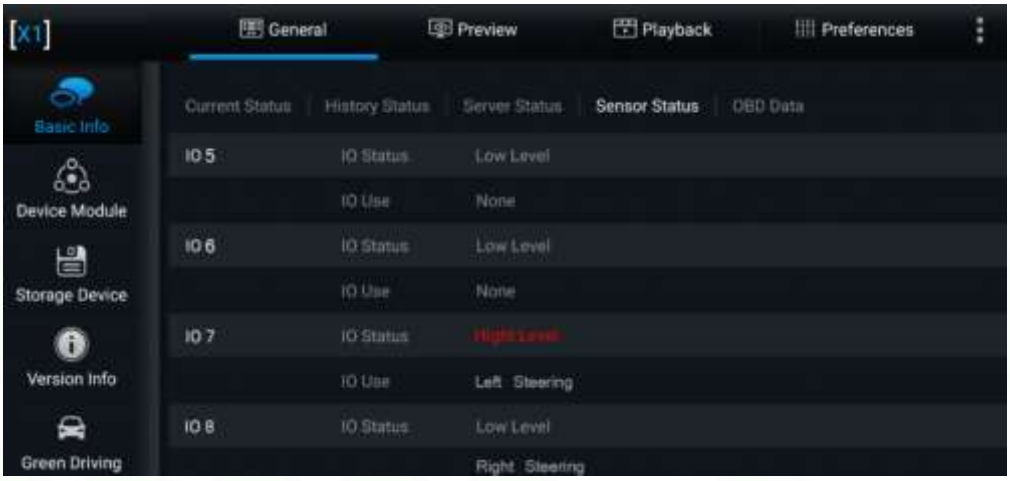

Figure 81: Screenshot of Sensor status.

Vehicle registration information

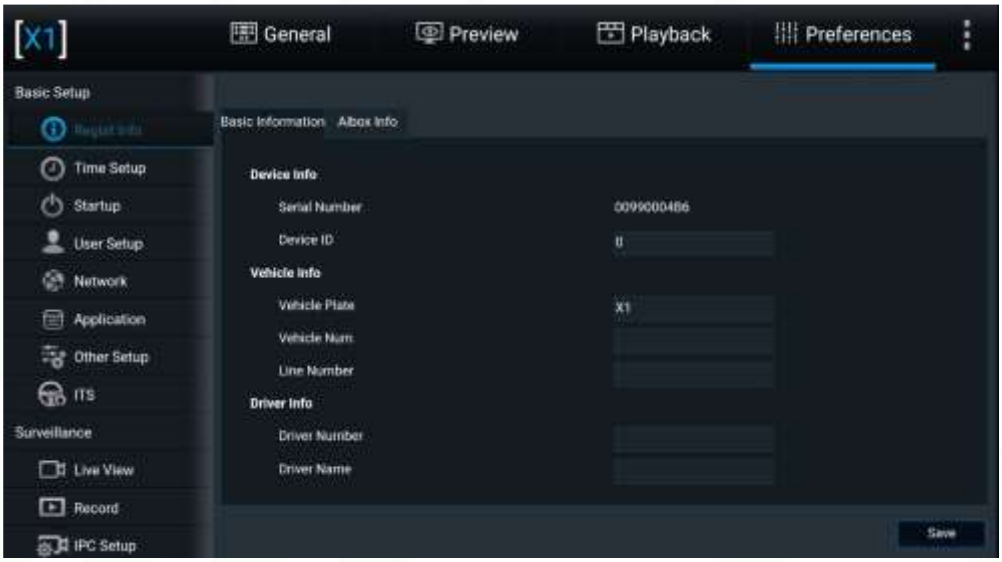

Figure 82: Screenshot : vehicle Information.

Camera Field Of View (FOV)

Figure 83: Screenshot of Frontal Camera

8 Installation Troubleshooting

LED Status Indicator

- Long time off: indicates power supply is off.
- Steady red light: The power is on, it is starting up and the power is not completed.
- Red light flashes per second: Indicates that the boot is completed, but the module is faulty.
    - Faults include no GPS module, no WIFI module, no SD card, channel video loss.
- Steady green light: Indicates normal operation with no module failure.
- LED flashes 2 times per second: Indicates that SW is being upgraded.

Can't find the MiX Vision AI WiFi hotspot in the APP?

- Check that the device is powered on and receiving steady power. The Green light LED on the main unit indicates that the device is "ON".
- Main unit WiFi works on AP (Access Point) mode only for 2 mins after each reboot and it will change to Client mode thereafter.

The system cannot start.

- Check the input power, whether the power wire is connected correctly, whether the ground wire is connected back to the battery, and whether the fuse on the power wire is in good condition.
- Check whether the ignition signal wire input to the power shows a voltage higher than 7V.

The device restarts uninterruptedly.

- Check whether the battery voltage is fluctuating. if it goes below the device's start-up voltage, the device would always restart.
- A faulty SD card may cause the device to restart. Remove the storage part and check whether it is damaged.

The device cannot record.

- Check whether the SD Cards are correctly installed, and whether they can be read normally in a computer.
- Check if the SD cards are formatted. The SD card should be formatted before normally storing record files.
- Check whether there is video signal input into the device from camera, and whether there is video/image on the screen.

There is no voice in record file?

- Access to Video Channel Settings, check if Audio is set to ON.
- There must be video input into the channel for recording and it must record normally.

The GPS works abnormally.

- Check whether the GPS antenna is installed correctly. There is a silk print logo on the GPS antenna holder behind the host device.
- Check whether the antenna receiver is sheltered. It should not be covered by any stuff, which may cause it to not receive signals.
- Environmental influence such as tree shades, being inside a tunnel, driving near tall buildings or elevated roads, thunderstorms or other weather influence, etc. can also cause signal loss or reception of wrong signals.

The device cannot shut down in ignition switch mode.

- Check if the ignition line connection mode is correct; and check whether there is voltage on ignition yellow line when the key is turned off.

- If the device has been set with schedule recording, it can't shut down if it is still during recording time of the task table.

8.1 Useful SMS commands

In some cases where incorrect settings was accidently applied to a unit like APN settings, you have the ability to SMS these settings to the device.

- Device needs to be online for SMS to take.
- Please do not forget the "!" at the end of the string.
- If you make an error, a error message will be send back.

Each section has a unique identifier and structure shown on each section below.

8.1.1 APN setting change

Only APN name can be set and not username and password.

Identifier: SAPN
Structure: 99+username,+password,+SAPN+(APNname)!

- **Example**: 99admin,admin,SAPNinternet!
  - Result: "internet" APN programmed

8.1.2 Server Setting change

Maximum of 2 servers can be set via SMS command.
Identifier: SMCM
Structure: 99+username,+password,+SMCM+server1+enable/disable,+Enable,+N9M Register Server,+N9M Media Server,+N9M Register Server Port, server2+enable/disable,+Enable,+N9M Register Server,+N9M Media Server,+N9M Register Server Port!

- **Example**: 99admin,admin,SMCM1,stm.au.mixtel.com,stm.au.mixtel.com,20001,20001!
  - Result: server1 set to stm.au.mixtel.com
- **Example**: 99admin,admin,SMCM1,stm.au.mixtel.com,stm.au.mixtel.com,20001,20001,2,1,stm.za.mixtel.com,stm.za.mixtel.com,20001,20001!
  - Result: server1 set to stm.au.mixtel.com and server2 set to stm.za.mixtel.com

8.1.3 Wi-Fi settings change

You can enable or disable Wi-Fi via SMS command and also select what mode (Client/AP) the Wi-Fi needs to be. The identifier is one of 3 Mode selections

- WIFIO = Disable (*Capital letter "O" and not number zero*)
- WIFI1 = Client Mode
- WIFI2 = AP Mode

8.1.3.1 Disable Wi-Fi

Structure: 99+username,+password,+Mode,+!

- **Example**: 99admin,admin,WIFIO!
  - Result: disable Wi-Fi

8.1.3.2 Client Mode

Structure: 99+username,+password,+Mode,+EncryptionType,+ESSID,+password,StaticDynamicIP,+!
StaticDynamicIP: 0 = static IP; 1 = dynamic IP.

- **Example**: 99admin,admin,WIFI1,WEP,streamax,streamax,1!
    - Result: Wi-Fi set to Client mode with WEP encryption, ESSID and password set to “Streamax” with dynamic IP address
- **Example**: 99admin,120223,WIFI1,WPA/WPA2-PSK,streamax,streamax,1!
    - Result: Wi-Fi set to Client mode with WPA/WPA2-PSK encryption, ESSID and password set to “Streamax” with dynamic IP address
- **Example**: 99admin,120223,WIFI1,WPA2.ENTERPRISE,streamax,streamax,streamax,1!
    - Result: Wi-Fi set to Client mode with WPA2.ENTERPRISE encryption, ESSID and password set to “Streamax” with dynamic IP address

8.1.3.3 AP Mode

Structure: 99+username,+password,+Mode,+EncryptionType,+ESSID,+password,+enable/disable+!

- **Example**: 99admin,admin,WIFI2,WPA,streamax,streamax,1!
    - Result: Wi-Fi set to AP mode with WPA encryption, ESSID and password set to “streamax”
- **Example**: 99admin,120223,WIFI2,WEP,streamax,streamax,1!
    - Result: Wi-Fi set to AP mode with WEP encryption, ESSID and password set to “streamax”.
- **Example**: 99admin,120223,WIFI2,NONE,streamax,1!
    - Result: Wi-Fi set to AP mode with No encryption, ESSID set to “streamax” and no password.

9 Firmware and Configuration upgrade (optional steps)

This step is only done if required. By default the devices will come with the latest FW and configuration file pre-loaded per region from the factory.

FW upgrade to be done via Web-browser.

- **Connecting to the C6D-AI**

NOTE: the Wi-Fi name of the unit will be ST_xxxxxxxxxx (example: ST-002B010A9A) where the xxxxxxxx refer to the devices internal serial number.

- **Power the device up by switching on Ignition.**

- **Connect to the devices Wi-Fi**

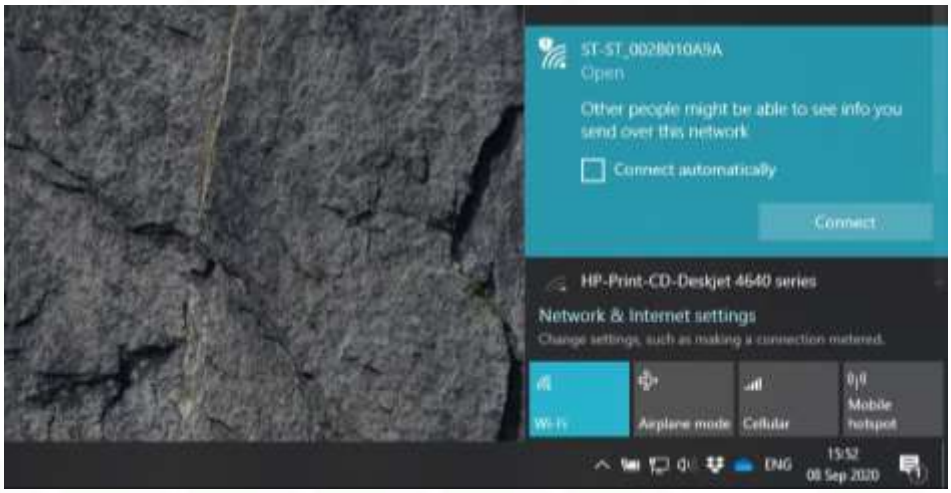

Figure 84: Selecting the C6D AI hotspot.

- **On any web browser go to the URL: http://192.168.240.1/login/default.html**
  - Only the admin user have access via web browser.
  - User name and password: ***admin/admin***

Figure 85: Login into the internal configuration tool.

9.1 Firmware Upgrade

The latest FW upgrade package can be requested.

Go to **Maintenance** > **Upgrade** > **Device Upgrade**. Browse the latest FW package and press **Upgrade**.

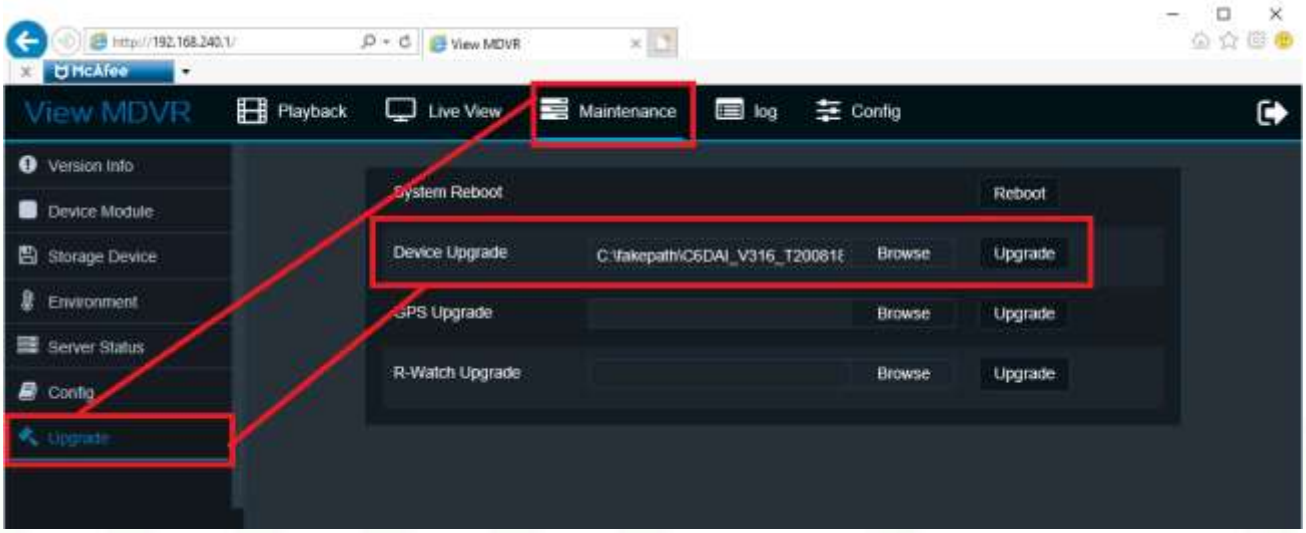

Figure 86: Selecting file to be upgraded.

You will see this message during the upgrade process.

Figure 87: Upgrade status bar.

NOTE: Monitor your Wi-Fi connection, the Wi-FI will disappear once upgrade process start, when you see the Wi-Fi for the unit again, you need to reconnect to it to complete the process.

9.2 Load Default Config

On a Web-browser go to the URL: http://192.168.240.1/login/default.html
Enter default user name and password. ***admin/admin***

The latest Config file can be requested

Go to **Maintenance** > **Config** > **Import Parameters**. Browse the latest Config file and press **Upgrade**.

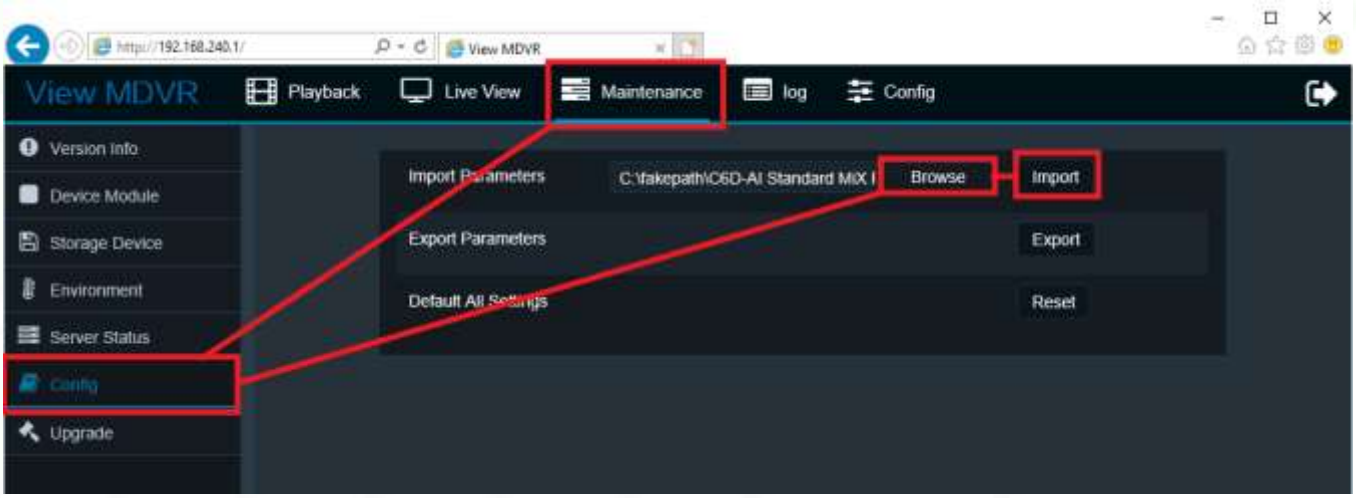

Figure 88: Updating the Device configuration.

9.3 APN Setup

Enter the APN details of the SIM Card you intent to use.
Default is “internet”

Go to **Config** > **Basic Setup** >**Network** > **Communication Module.** Change the APN details to that of your SIM provider and press **SAVE** to save the settings.

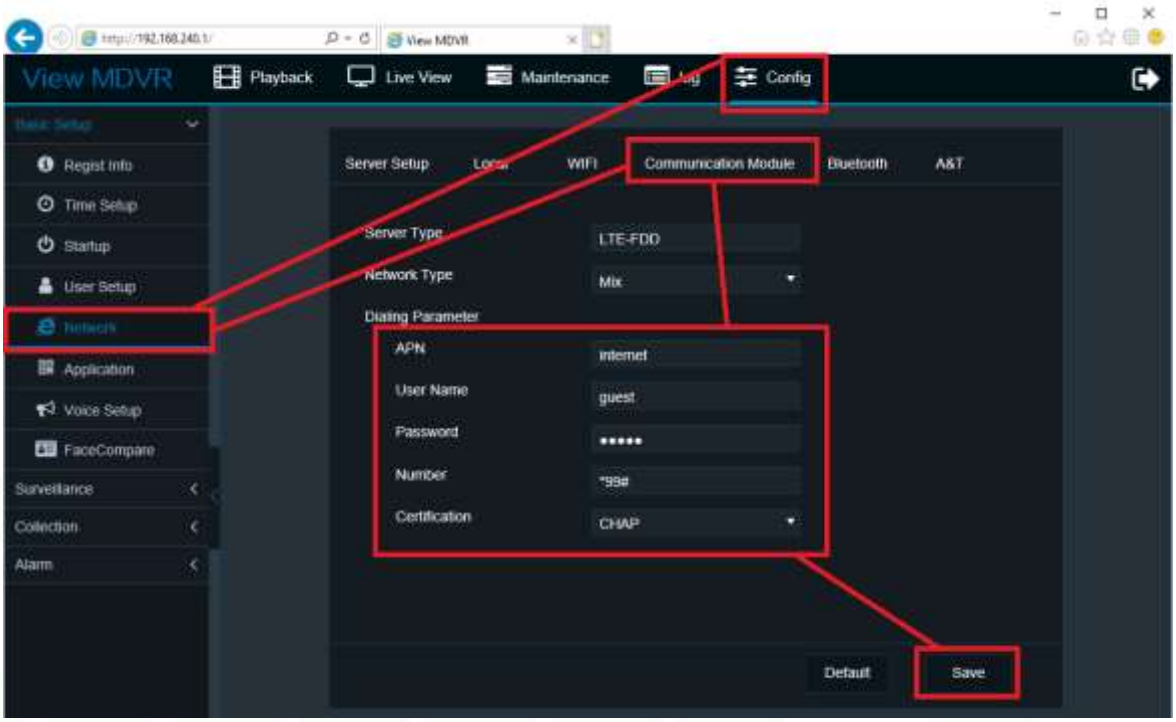

Figure 89: Setting up the APN.

9.4 Firmware and Configuration upgrade OTA (optional steps)

Over the air updates of Firmware and Configuration is possible. Before this step can be done the unit must have been calibrated and confirmed operation on MiX Fleet Manager.

Please log a SR if this is required as limited access to this platform is available.

-END-