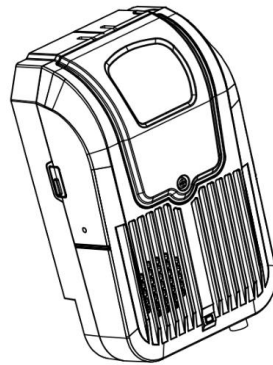
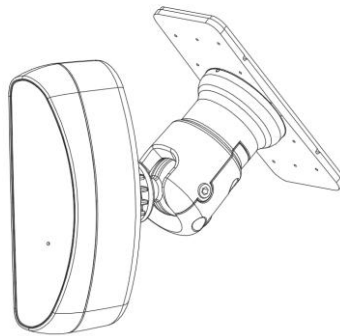


IP AI Cameras and Accessories

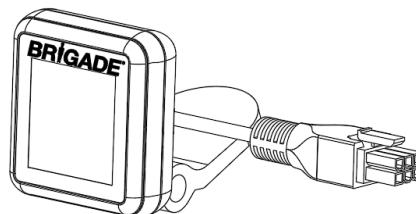
IP-FFC-AI-01(8027)



IP-DFC-AI-XX-XX(XXX)(8029, 8088, 8089)



MDR-HWU-01(7417)



Installation and Operation Guide

Please refer to www.brigade-electronics.com for the latest version of this manual

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1 Introduction to IP AI Cameras and Accessories

This manual introduces Brigade IP AI cameras IP-FFC-AI-01 for forward facing scenarios and IP-DFC-AI-XX-XX(XXX) for driver facing scenarios. The AI (artificial intelligence) cameras analyse the images generated to identify key high-risk events. The AI cameras are equipped with powerful image processors to provide capabilities to capture and enhance images, as well as processing event detections based on set parameters.

Brigade IP AI cameras rely on Ethernet transmission for fast communication and their own onboard 'edge' encoding capability to maintain maximum resource availability on the MDR or Dashcam devices they connect to. This benefits the whole recording system and ensures high performance for recording of high-resolution non-IP cameras.

IP-FFC-AI-01 is a windshield mounted, forward-facing camera which captures the view ahead, and is responsible for ADAS functions such as Lane Departure Warning, Front Collision Warning, Headway monitoring etc. The camera is equipped with a high-resolution lens for clearly capturing lane markings, vehicles ahead, and moving objects.

IP-DFC-AI-XX-XX(XXX) is driver facing camera which is available with three different mounting brackets: IP-DFC-AI-WS-01 has a windshield mounting bracket, IP-DFC-AI-DB-01 has a dashboard mounting bracket while the IP-DFC-AI-AP-01 has the A-pillar mounting bracket. The driver facing cameras are focused on the driver for assistance such as fatigue detection, smoking detection, seatbelt, distraction, etc. The camera has built-in IR for multiple purposes (night vision, glass penetration, sharp comparison) and the focal length is customised to ensure only the driver's movements are captured, maintaining the passengers' privacy.

All AI cameras covered in this manual are compatible with MDR 600 Series and Dashcam DC-204 Series with dedicated firmware versions. Configuring AI alarm and detection thresholds is performed via the OSD if connecting to an MDR, or through the SmartController App if connecting to a Dashcam. For setup details please check with Brigade before installing.

IP AI camera firmware consists of two parts, one is the normal IP camera system for image processing and image adjustment, the other is the AI algorithm which is in effect a special database to provide the camera with information on different conditions and scenarios. To ensure the algorithm is equipped with the latest training data for best performance, the firmware should be updated periodically, approximately every 3 months. Development work is continuous within Brigade, so these updates provide the best performance with enriched detection and improved accuracy. The camera will still work to specification and at a consistent level without updating, but certain aspects will be improved over time so maintaining the latest version of firmware is recommended. The IP AI cameras can be updated via the MDR OSD or via the cloud for connected systems. This detail is covered later in the manual.

Correct installation and calibration of the IP AI cameras is essential for correct detection of high-risk events. This Installation process is described in chapter 3, section 3.8 below, please follow these steps to complete the installation correctly. As for calibration, the current IP AI cameras support automatic calibration which means the process will be completed during the first time the system runs. Users do not need to worry about setting up special tools to manually do the calibration, the system will do it by itself and automatically adjust the status from time to time during normal driving.

This manual will cover IP AI camera installation, calibration, features, and maintenance. For detailed AI alarm type and management, please refer to the MDR 600 Series Installation & Operational Guide.

It is imperative that Brigade IP AI cameras are fitted and commissioned by competent and trained technicians. The installers are responsible for the correct setup of the overall system and must adhere to relevant regulations and legislation.

Notice: The products covered in this document are intended solely as driving aids and should not be relied upon as the primary means for vehicle operation. Vehicle safety remains the responsibility of the driver at all times.

Table 1: Description of AI Camera Models:

MODEL	Resolution	Framerates	AI Functionality	Compatibility
IP-FFC-AI-01	2688 x 1520	30fps	FCW, HWM, LDW	MDR 600 Series
IP-DFC-AI-WS-01	1280 x 800	20fps	Fatigue, Distraction, Yawning, Handheld Devices, Smoking, Seatbelt	MDR 600 Series & AI connected Dashcam
IP-DFC-AI-DB-01				
IP-DFC-AI-AP-01				

Warning: Prior to attempting to set the system up, please ensure the IP AI Cameras Installation & Operation Guide is thoroughly read and understood. Brigade will not be responsible for any failures due to incorrect installation or operation.
Ensure your anti-virus software has exclusions in place to allow the MDR software package to function properly.

2 IP-FFC-AI-01 - Forward Facing Camera

2.1 Product Appearance



IP AI Camera - Forward Facing, Audio (1520P)

2.2 Product Features

2.2.1 Basic Features

- Supply voltage 9V – 16V, nominal 12V (powered via the host device).
- Supports video compression rate H.264 / H.265.
- Supports audio compression standards ADPCM, G711A, G711U.
- Supports blacklight technology to compensate for image brightness and expose more detail during nighttime.
- Supports audio input.
- Supports internal speaker for AI audio alarms output.
- Supports WDR.
- Supports white balance.
- Supports viewing angle adjustment for windscreen rakes of between 20° to 90°.

2.2.2 AI Features

IP-FFC-AI-01 supports four AI features, namely Lane Departure Warning (LDW), Headway Monitoring (HWM), Front Collision Warning (FCW) and Pedestrian Collision Warning (PCW).

All AI alarms can be customised to output different triggers and be set to different thresholds. These settings can be found in the settings on the MDR. Please refer to the MDR installation and operational guide for more details. Here in this manual, we will simply introduce each AI alarm's functionality and how it works.

Lane Departure Warning (LDW) works by the camera analysing images to detect road markings and vehicle positioning. The system also uses trigger inputs to detect if the vehicles turn signal is active, to determine if a manoeuvre is intentional or not. If the system detects the vehicle is moving across lanes without correct signalling, the LDW will be triggered.

When the warning alarms are triggered, an audible message or beep sound will be output from the MDR via the attached monitor. This is configurable within the settings on the MDR.



Lane Departure Warning Figure 1

Headway Monitoring (HWM) analyses images of the vehicle in front to calculate the following distance between the monitored vehicle and vehicle ahead. This information is combined with the vehicle speed and, if below the calculated safe threshold, the HWM will trigger an alert for the driver to increase their following distance. The threshold varies depending on the type of vehicle ahead. Whether it is a truck, van or car will lead to a different threshold being used by the algorithm to ensure the safe distance is appropriate.



Headway Monitoring Figure 2

Front Collision Warning (FCW) builds on the concept of HWM, adding in the relative closing speed to detect whether there is an imminent risk of collision. The algorithm detects the distance to the vehicle in front based on the vehicle outline, and then calculates the relative speed between the two. If the system identifies that the following distance is rapidly closing, then the FCW alert will be triggered at a point when it will only take 0.6s to collide with the vehicle ahead if it suddenly stops.

This alarm does not have many thresholds to adjust as 0.6s is a life crucial value which should not be reduced for safety reasons.



Front Collision Warning Figure 3

Pedestrian Collision Warning (PCW) is to detect pedestrians, bicycles or motorcycles is ahead of the vehicle in the same lane. If the system hasn't been able to detect the lane markings, then it will assume the vehicle is running on a straight road, and any pedestrians or cycles detected will be taken into consideration for possible collision.

The camera will calculate the relative speed between vehicle and pedestrians, divided by relative distance. If the relative distance is closing rapidly, the alarm will be triggered to notify the driver to take immediate action.

This alert is currently disabled by default as it has not been fully tested to Brigade's standards. It is recommended not to enable this function until a communication is made by Brigade to confirm it is having been released for use.



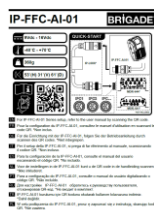
Pedestrian Collision Warning Figure 4

Note: AI detection annotations are not visible on MDR-Dashboard, will be visible on Brigade Video Telematics platform.

2.3 Kit Content



Camera
IP-FFC-AI-01-C



Link Card
IP-FFC-AI-01-QR Link Card



Cleaning wipes
Cleaning Pad



Cable Grub
IP-FFC-AI-01-GRUB
Note: the cable grub only used in bottom cable exit

2.4 Optional Accessories



3M Pad
IP-FFC-AI-01-3M-PAD

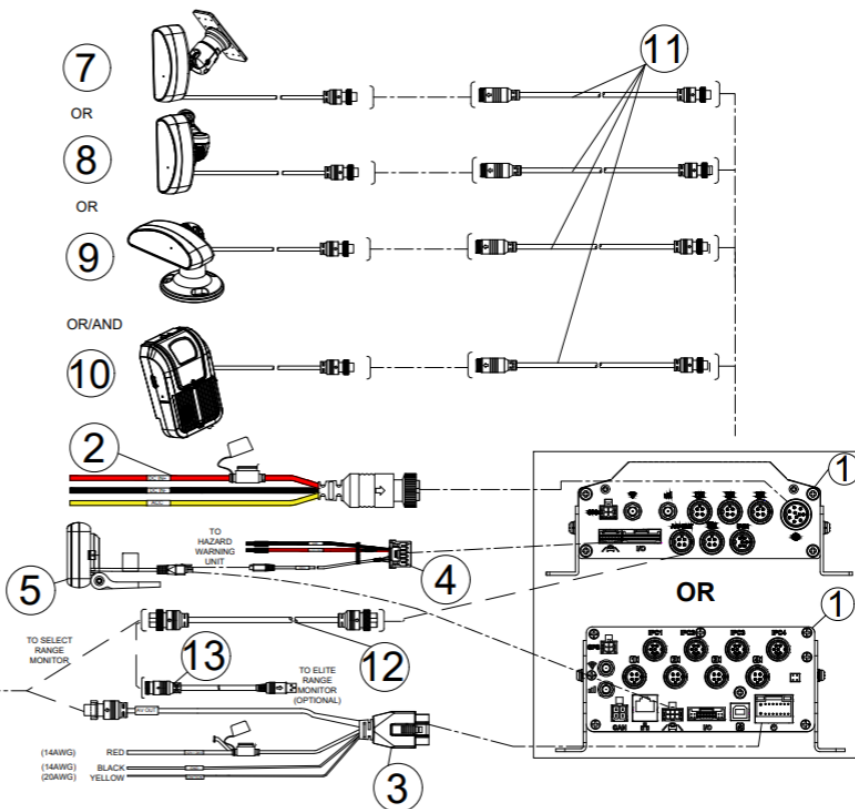
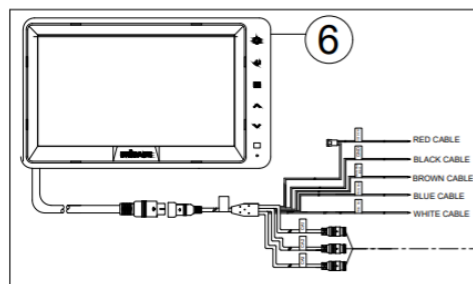


Cable Grub
IP-FFC-AI-01-GRUB

Note: the cable grub only used in bottom cable exit.

2.5 Connection Diagram

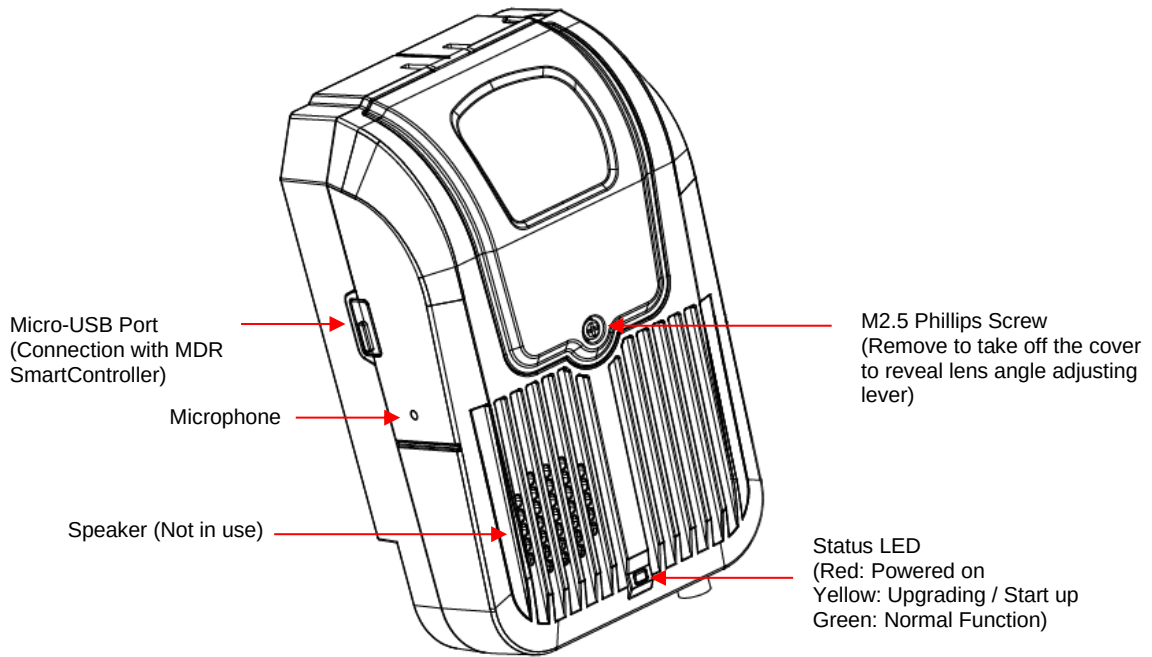
ITEM	MODEL NUMBER	DESCRIPTION
1	MDR-641 VARIANTS	MDR-600 4G (OPTIONAL) & WIFI (OPTIONAL), 4 ANALOGUE CHANNELS, 1 IP CHANNEL, 500GB / 1TB / 2TB CMR / SSD
	MDR-644 VARIANTS	MDR-600 4G (OPTIONAL) & WIFI (OPTIONAL), 4 ANALOGUE CHANNELS, 4 IP CHANNELS, OPTIONAL CMR/SSD, 64GB SD
2	MDR-PWR-02	MDR POWER CABLE 9-PIN
3	MDR-PWR-01	MDR POWER CABLE
4	MDR-AC-HWU-01	MDR ADAPTER CABLE FOR HAZARD WARNING UNIT
5	MDR-HWU-01	HAZARD WARNING UNIT
6	VBV-7104HFM	SELECT MONITOR, 10.4" AHD, 4 INPUTS, AUDIO
7	IP-DFC-AI-WS-01	IP AI CAMERA-DRIVER FACING, WINDSCREEN MOUNT
8	IP-DFC-AI-AP-01	IP AI CAMERA - DRIVER FACING, A-PILLAR MOUNT
9	IP-DFC-AI-DB-01	IP AI CAMERA - DRIVER FACING, DASHBOARD MOUNT
10	IP-FFC-AI-01	IP AI CAMERA - FORWARD FACING, AUDIO (1520P)
11	IP-L6XX	IP CAMERA EXTENSION CABLE - 1M, 3M, 5M, 10M, 15M, 20M, 30M (OPTIONAL)
12	AC-075	CMS ADAPTER CABLE SELECT FEMALE TO FEMALE
13	AC-020	ADAPTER CABLE (OPTIONAL) ELITE SERIES MONITOR TO SELECT SERIES CABLE OR CAMERA



IP AI Camera Generic Figure 5

2.6 Installation

2.6.1 Product Hardware



IP-FFC-AI-01 Hardware Overview Figure 6

Note: The cable entry point may be altered from the bottom (default) to the top of the camera, by removing the two screws behind the upper cover from the rear of the camera body and re-routing the cable internally. The original cable hole in the bottom of the camera housing must be sealed using the Cable Grub supplied. Anti-static precautions must be taken during disassembly, to avoid damage to the camera's internal electronics. Ensure no dust, dirt or other items are allowed to enter the camera before re-assembly.

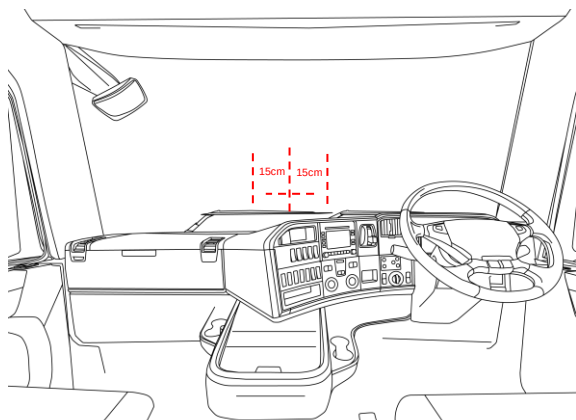
2.6.2 Installation and Set Up

2.6.2.1 Preparation of Hardware and Software Supporting Equipment

Before beginning the installation, please make sure to have a Philips screwdriver, IP camera extension cable and an MDR available along with the IP AI camera/s. The screwdriver will be used for adjusting the lens angle depending on the rake of the windscreen. The cameras are provided with short tail cables so extension cables will be necessary; the installer should select a suitable length extension cable depending upon the vehicle being fitted. The MDR is the host in the system which supplies power and processes the AI data transmitted from the IP AI cameras. Since IP-FFC-AI-01 equipped with Brigade's standard 6-pin connector, it can connect directly to the IP camera connections on the MDR-644 or 641. For the MDR-641 one IP AI camera can be connected i.e. either the FFC or DFC, not both. For the MDR-644, IPC1 – IPC4 may be used for this camera meaning that both FFC and DFC cameras can be used simultaneously. After connection, the live view image will appear on the relevant channel, CH5 – CH8 (IPC1 – IPC4).

A mobile device is on the list of necessary equipment because the installer needs the SmartController app to successfully install and calibrate the IP AI cameras. The installer should download the SmartController app from the iOS or Android App store. The app is available for both Apple and Android devices, see *MDR SmartController (6628) - Installation Guide V1.0 ENG WEB* for details on the appearance and usage of the SmartController app.

2.6.2.2 Installation Location



IP-FFC-AI-01 positioning requirements Figure 7

The installation position of the IP-FFC-AI-01 should be established using the rules below:

- 1) The camera lens must be within 15cm of the horizontal centre line of the windshield...
- 2) The camera view must be able to capture both the road and sky in front of the vehicle. For optimal performance, the horizon should be roughly in the middle of the image. To adjust the lens angle, please refer to the illustration and description in the paragraph below.
- 3) The camera can be installed either close to the bottom or the top of the windscreen, and it should be situated within the swept area of the windscreen wipers to ensure the image always be clear. However, the camera must not obstruct the driver's view in any condition; installer's need to make sure the installation position has been properly chosen.

After deciding on the preferred location, Installers should clean the windshield at the installation spot to remove dirt which may impact the longevity of the bond. Installers should peel off the film from the camera 3M pad and press it firmly on the glass, ensuring it is vertical.

Note: the camera must be mounted as straight as possible on the windscreen for optimal performance. It is recommended to have a second person visually assist with the angle of fitment. Once the camera is installed, it cannot be easily removed.



IP-FFC-AI-01 Lens Adjustment Figure 8

To adjust the camera lens angle, please use the M2.5 Philips screwdriver to loosen the cover screw and take off the upper cover to reveal the inside of the housing. Use the Philips screwdriver again to loosen the locking screw.

The lens angle can be adjusted to fit windshields with rakes between 20° - 90°. The housing has numbered markings to help the installer identify the angle, which can then be easily applied to other similar fleet vehicles.

After checking the output image from the monitor / mobile app, ensure that the position and pointing is as required, lock the position with the screw and then put the cover back and fasten the cover screw.

3 IP-DFC-AI-XX-XX(XXX) – Driver Facing Cameras

3.1 Product Hardware

The features of the camera are detailed below:

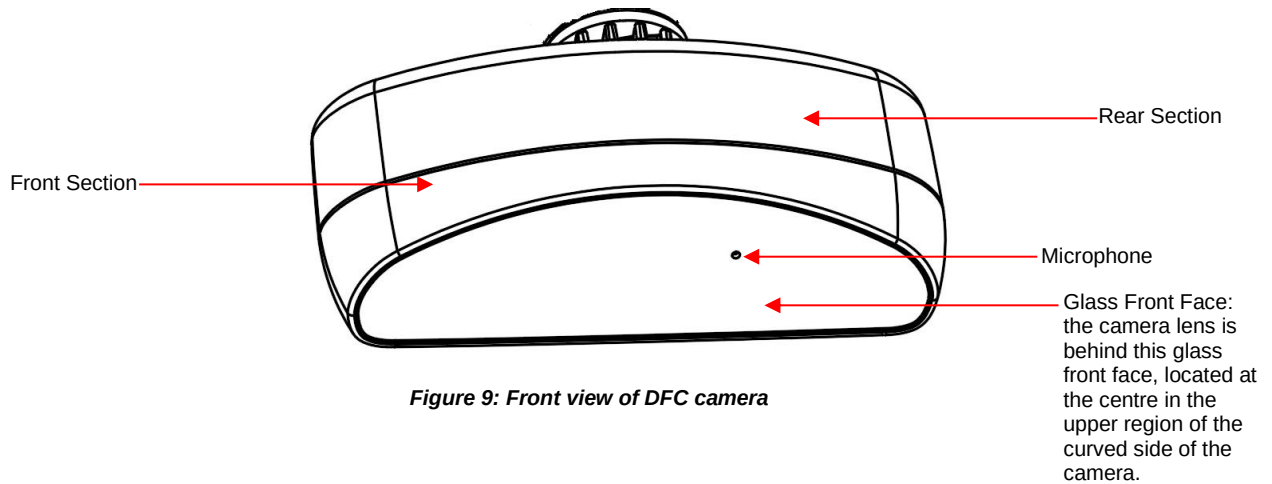


Figure 9: Front view of DFC camera

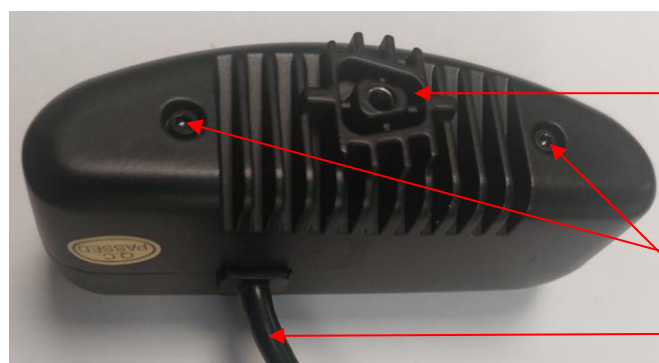


Figure 10: Rear View of DFC camera

Fixing groove for connecting to A-Pillar and Dashboard mounting brackets

Fixing hex screws holding front and rear sections together. It is not recommended to remove these screws as it would void the product warranty.

Cable for connecting to MDR/AI Connected Dashcam

The functionality and features of the cameras are identical for all three types of the driver facing cameras, they vary simply on their different mounting bracket options.

3.1.1 IP-DFC-AI-WS-01 – IP AI Camera Driver Facing Windscreen Mount



Figure 11: DFC camera with Windscreen Mounting bracket

3.1.2 IP-DFC-AI-DB-01 – IP AI Camera Driver Facing Dashboard Mount



Figure 12: DFC camera with Dashboard mounting bracket

3.1.3 IP-DFC -AI-AP-01 – IP AI Camera Driver Facing A-Pillar Mount



Figure 13: DFC camera with A-Pillar Mounting bracket

3.2 Product Features

3.2.1 Basic Features

- Supports video compression rate H.264 / H.265.
- Supports blacklight technology to compensate for image brightness and expose more detail under dark conditions e.g. during nighttime.
- Supports audio input.
- Built-in G -sensor to automatically adjust the horizontal and vertical changes of the image during installation
- Adjustable Infra-red light intensity based on the level of light in the environment

3.2.2 AI Features

IP-DFC-AI-WS-01, IP-DFC-AI-DB-01 and IP-DFC-AI-AP-01 support the following AI features: Driver Fatigue, Driver Distraction, Yawning, Handheld Devices (including phone), Smoking Detection and Driver Not Wearing Seatbelt. There are experimental features which are available but disabled by default, these are planned to be fully released in future updates.

All AI alarms can be customised for different triggers and thresholds, all settings are available in MDR and AI connected Dashcam firmware and adjusted via OSD. For details, please refer to MDR and /or AI connected Dashcam installation and Operational Guide. Here in this manual, we simply introduce each AI alarm's functionality and how it works.

For most of the features LV1 and LV2 speed can be set. The LV1 speed range is the setting at which the driver gets an audible mp3 voice alert that informs them of the actions that need to be taken based on the algorithm's analysis of the images from the driver facing camera. The LV2 speed is usually set as a higher value than LV1. When this speed is reached, alerts triggered result in a high-pitched beep sound instead of an audible voice warning. This is so the driver is warned more quickly in urgent situations than waiting for the voice alert to complete.

Where a Hazard Warning Unit is fitted, an audible beep is played through this unit and a visual icon is displayed on the LCD panel to show the relevant alert. Please refer to the section below for details about the usage of the Hazard Warning Unit.

The audible mp3 voice alerts can be heard when the Driver facing camera connects to a recorder with speaker be it the built-in speaker of the AI Connected Dashcam or from a monitor connected to the MDR.

The pictures below show when the relevant alerts are triggered; the video playback is obtained from the algorithm play mode in the Brigade Video Telematics Platform.

Driver Fatigue is based on camera images to detect whether the driver is either blinking frequently or closes eyes for a specific period and speed which are set as the trigger conditions. It therefore captures medium and severe fatigue scenarios respectively.

Each time a scenario meets the trigger conditions for this feature to be triggered, the driver gets the audible beep or voice alert warning from the Monitor. Also, icon can be displayed and a high-pitched beep from the Hazard Warning unit if it is connected to the MDR. The type of alert depends on the speed at which the alert is triggered.

Each time when the alarm, or other AI alarms have been triggered, an audio message or harsh beeps will be output from the MDR (configurable).



Figure 14: Driver Fatigue

Yawning is referred to as having mild fatigue risk level because it is triggered when the driver opens their mouth to a certain width that exceeds the threshold level which is classified as yawning. The duration of time for which the driver opens their mouth wide for which yawning alert is triggered and the speed of the vehicle at which this alert is triggered can all be set. However, there is a default setting that has been pre-set by Brigade which is based on comprehensive testing done, if needed the installer/fleet manager can change the setting to match the specific need of their fleet.

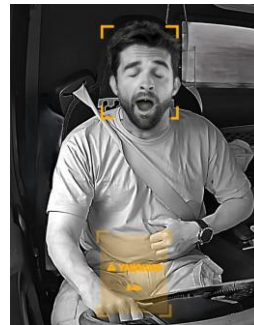


Figure 15: Yawning

Driver Distraction is to capture the driver's inattention through eyes/head movements. It checks if the driver is looking down or looking left or right instead of looking ahead. The duration of the eye/head movements is configurable and the speed at which the feature is triggered can also be set.

The default values pre-set by Brigade have been tested and deemed practical, however the installer/fleet manager can change the settings to suit the specific need of the fleet.



Figure 16: Driver Distraction

Smoking is to detect if driver is holding a cigarette and is smoking in the vehicle. The cigarette can be detected when in driver's mouth or when the driver holds the cigarette towards their mouth.

If a scenario reaches the trigger thresholds for duration and vehicle speed, then an alert is heard. This alert will be a voice warning or a beep depending on what the LV1 and LV2 speed have been set to and whether a monitor is connected to the MDR or a hazard warning unit.

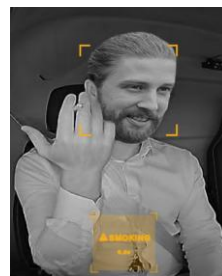


Figure 17: Smoking detected

Handheld Devices detects if driver is using a handheld device such as mobile phone. An alert is triggered if the system detects that the driver is putting the handheld device to their ear or holding it to their mouth etc as long as the driver is holding the phone is the area of visibility of the camera an alert will be triggered.

Each time when the alarm, or other AI alarms have been triggered, an audio message or harsh beeps will be output from the MDR depending on whether it is connected to a monitor and or a Hazard warning unit..



Figure 18: Handheld Devices

No Driver is to capture situations where the driver facing camera cannot detect the driver's face for a period. The AI is trained to detect facial features such as forehead, eyes, nose, mouth, chin etc. In instances where a human face is not detected, an alert is raised. This alert is triggered at set conditions (speed, duration and effective time / Alarm Delay).



Figure 19: No Driver

Seatbelt is to detect when the driver is not wearing their seatbelt for a set time. The trigger conditions (which include speed, duration (time) and effective time) are configurable. However, the default settings recommended by Brigade are already pre-set and are based on comprehensive testing. Installer/Fleet manager can change the trigger conditions to suit the needs of the fleet or industry if needed. This feature is available but not enabled.

Infra-Red Block is to detect scenarios where the driver is wearing infra -red blocking glasses or coated glasses which can affect the normal operation of the driver facing camera in such a way that it affects the detection of fatigue or distraction because the driver's eyes cannot be seen by the camera.

This feature is configurable, and alarm will be triggered to notify the driver and fleet manager of the situation. This feature is available but not enabled.

No Mask is to detect whether the driver is wearing facial mask. This is especially useful in scenarios where the driver is required to wear a facial mask. This feature is available but not enabled.

3.3 Compatibility

The Driver facing camera is compatible with MDR 600 Series and AI Connected provided that they have the necessary version of firmware installed. The Driver facing camera also has its own firmware which must match with that installed on the recorders to ensure full compatibility and functionality. It is recommended that the customer always use the latest MDR and AI connected dashcam firmware with the IP AI cameras.

3.4 Kit Content

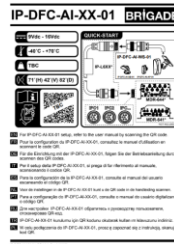
3.4.1 IP AI Camera Driver Facing Windscreen Mount (IP-DFC-AI-WS-01)



IP AI camera Driver Facing
Windscreen Mount
IP-DFC-AI-01-C and
DFC-BRKT-WS-01



Hex key and
Alcohol wipe
DFC-BRKT-WS-01-FIX



Link Card
IP-DFC-AI-01
QR LINK CARD

3.4.2 IP AI Camera Driver Facing Dashboard Mount (IP-DFC-AI-DB-01)



IP AI Camera Driver Facing
Dashboard Mount
IP-DFC-AI-01-C and
DFC-BRKT-DB-01



Hex key and
3x M3.5 x 25mm
Self-tapping screws
DFC-BRKT-DB-01-FIX



Link Card
IP-DFC-AI-01
QR LINK CARD

3.4.3 IP AI Camera Driver Facing A-Pillar Mount (IP-DFC-AI-AP-01)



IP AI Camera Driver Facing
A-Pillar Mount
IP-DFC-AI-01-C and
DFC-BRKT-AP-01



Hex key and
2x M3.5 x 25mm
Self-tapping screws
DFC-BRKT-AP-01-FIX



Link Card
IP-DFC-AI-01
QR LINK CARD

3.5 Optional Accessories and Spares

3.5.1 Mounting Brackets

3.5.1.1 Windscreen Mounting Bracket Kit (including the 3M pad)



Windscreen Mounting Bracket
DFC-BRKT-WS-01



Windscreen Mounting Bracket –
Fixing Kit
DFC-BRKT-WS-01-FIX

3.5.1.2 Dashboard Mounting Bracket Kit



Dashboard Mounting Bracket
DFC-BRKT-DB-01



Dashboard Mounting Bracket
– Fixing Kit
DFC-BRKT-DB-01-FIX

3.5.1.3 A-Pillar Mounting Bracket kit



A-Pillar Mounting Bracket
DFC-BRKT-AP-01



A-Pillar Mounting Bracket
– Fixing Kit
DFC-BRKT-AP-01-FIX

3.5.2 Adhesive Pad



Windscreen Mounting Bracket
– 3M-PAD
DFC-BRKT-WS-01-3M-PAD

3.6 Fitting Brackets to the Driver Facing Camera

3.6.1 Windscreen Mounting Bracket

The following are needed for the assembly:

- a) Driver facing camera (see section 3.4.1 for details)
- b) Windscreen Mounting bracket bits (see section 3.4.1 for details)
- c) Windscreen Mounting bracket fixing kit (see section 3.4.1 for details)
- d) 2.0mm hex key (red hex key depicted below)
- e) Phillips PH1 or PZ1 Screwdriver (depicted below)

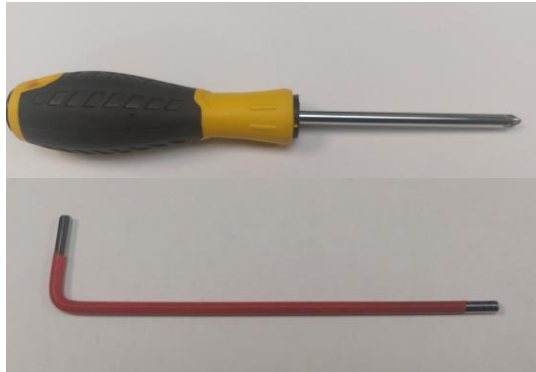


Figure 20 Tools need to fit Windscreen Mounting Bracket to DFC camera that are not kit content

Fitting the windscreen mounting bracket to the driver facing camera is carried out in stages, please follow the steps detailed below:

Step 1: Check that all part listed are present and recommended tools are available.



Figure 21: Ball join of the windscreen mounting bracket



Figure 22 Connecting halves of the windscreen mounting bracket that hold the ball joint in place



Figure 23: Mounting bracket fixings with 2.5mm hex key

Step 2: Align the pyramid with the hole in the middle to the similar shape on the ball joint and ensure that they key into each other. Fasten the ball joint to the camera using the M3.5x25mm screw and the Phillips screwdriver. Ensure that the screw is fastened tight because there will be no access to tighten the screw again once the bracket is fully assembled around the camera.



Figure 24: Items required to connect the camera to the ball joint



Figure 25: Assembled camera to ball joint

Step 3: Place the ball joint (with camera attached) inside the cup of the bracket base and secure with clamping piece.



Figure 26: Connection to the larger piece with flat base of the mounting bracket



Figure 27: Fitting the second piece of the mounting bracket to cover the ball joint

Step 4: Secure the clamping bracket in place using the 4x M 2.5 x 7mm hex screws. Ensure the screws are tightened.
Note: This does not secure the position of the camera.



Figure 28: kit for fixing the bracket pieces to the ball joint.

Step 5: Fit the 3x 2.5mm silver grub screws, as shown in Figure 28, to temporarily secure the camera position for installation.



Figure 29: Fixing the orientation of the camera with the silver grub screws.

To disassemble the components please follow the instructions above in the reverse order.

3.6.2 Dashboard Mounting Bracket

The items that are needed for this are:

- a) Driver facing camera (see section 3.4.2 for details)
- b) Dashboard Mounting bracket bits (see section 3.4.2 for details)
- c) Dashboard Mounting bracket fixing kit (see section 3.4.2 for details)
- d) 3.0mm hex key (a silver-coloured hex key comes with the bracket fixing kit, however a red 3.0mm hex key depicted below will be used for illustration of the assembly instructions)

The steps for fitting the dashboard mounting bracket to the driver facing camera are as below:

Step 1: Check that all part listed are present and recommended tools are available.



Figure 30: Dashboard bracket components, fixings and tool

Step 2: Connect the neck section to the base section of the bracket using a 3mm hex screw, as shown in Figure 30.



Figure 31: Dashboard mounting bracket components to be fixed together

Step 3: Place the plastic camera adapter disc on the back of the camera and fit to bracket using 1x 3mm hex screw.



Figure 32: The fitting facing of the plastic face with the back of the camera



Figure 33: Fitting the camera to the mounting bracket

To disassemble the components please follow the instructions above in the reverse order.

3.6.3 A-Pillar Mounting Bracket

The items that are needed for this are:

- a) Driver facing camera (see section 3.4.3 for details)
- b) A-Pillar Mounting bracket bits (see section 3.4.3 for details)
- c) A-Pillar Mounting bracket fixing kit (see section 3.4.3 for details)
- d) 3.0mm hex key (a silver-coloured hex key comes with the bracket fixing kit, however a red 3.0mm hex key depicted below will be used for illustration of the assembly instructions)

The steps for fitting the A-Pillar mounting bracket to the driver facing camera are as below.

Step 1: Check that all part listed are present and recommended tools are available.



Figure 34: A-Pillar Mounting bracket components and fixings screws

Step 2: Connect the second piece (numbered 2 in the left picture above) of the bracket to the third piece (numbered 3) of the bracket. Ensure that the marking on the second (numbered 2) piece aligns with the marking on the base third (numbered 3) piece.



Figure 35: A-Pillar mounting bracket second and third pieces being fixed together.

Step 3: Fix the two pieces together using one of the 3x M4 x 11mm hex head screws through the hole at the bottom of the base (number 3) piece and using the 3.0mm hex key.

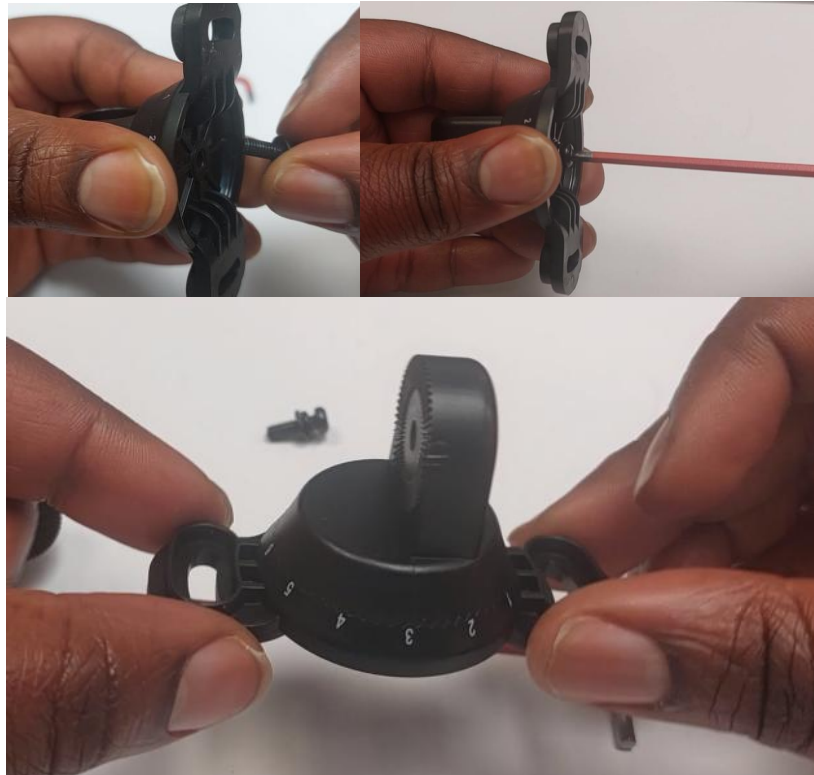


Figure 36: A-Pillar mounting bracket using the hex head screw and hex key to fix the two pieces together.

Step 4: Connect piece number 1 to the number 2 piece ensuring that the grooves on the pieces align.



Figure 37: A-Pillar mounting bracket connecting the top to the middle piece of the bracket

Step 5: Fix the top piece to the middle piece using the second M4 x 11mm hex screw and the 3.0mm hex key provided.

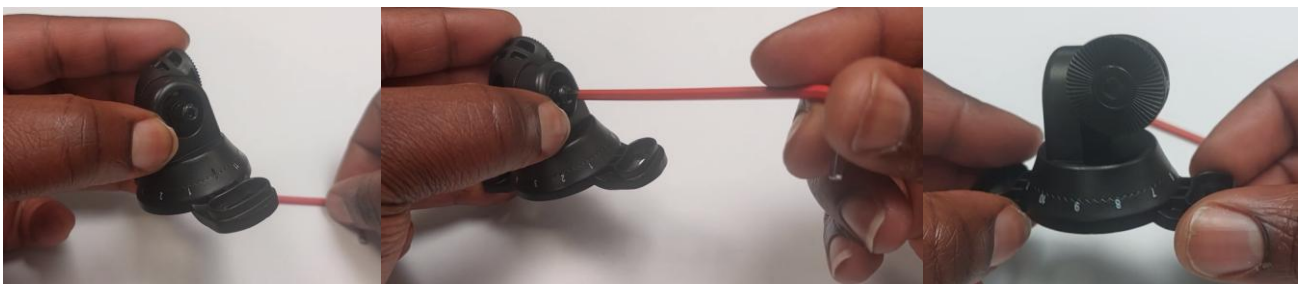


Figure 38: A-Pillar Mounting bracket, fixing the top piece to the middle piece with the second hex head screw using the hex key

Step 6: Connect the plastic disc to the matching pattern at the rear of the camera.

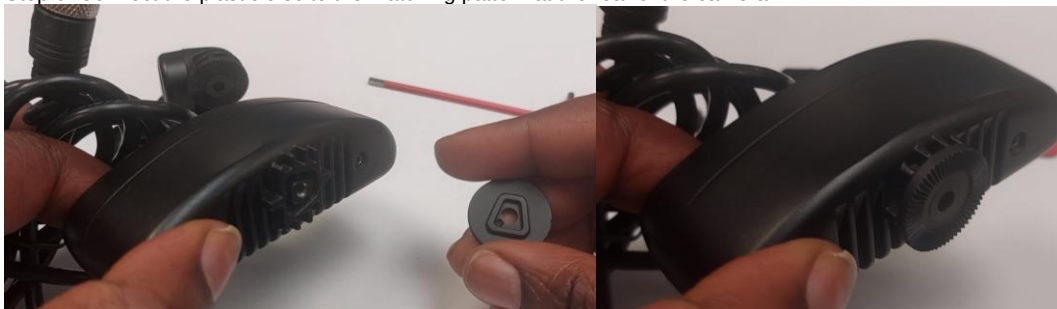


Figure 39: A-Pillar Mounting Bracket, fitting the plastic disc to the rear of the camera with the same shaped pattern/groove.

Step 7: Fit the camera to the bracket, ensuring that the marking on the plastic disc and the top piece of the bracket align.



Figure 40: Fitting the camera to the mounting bracket

Step 8: Use the third hex M4 x 11mm head screw to fix the bracket assembly to the camera



Figure 41: fixing the camera to the mounting bracket with the third hex head screw

3.7 Installation

During vehicle installation it is recommended that the driver facing camera be installed on the driver side of the vehicle between 50cm to 100cm distance from the seated driver and that there are no objects obstructing the view of the driver during the camera installation to ensure that the driver's face and seatbelt features can operate correctly. It is recommended to power up the system and view the image via an MDR or the Smart Controller App to adjust the camera to the desired position before fixing in position.

The type of camera to be used for the installation will be determined by the vehicle type, dimensions and which installation method is acceptable to the vehicle owner. For installation that demands that no holes be drilled to the vehicle, the windscreen mounted camera should be installed, this camera should be installed close and parallel to the A-pillar on the driver's side of the vehicle with the camera on its side and the curved top pointing towards the passenger's side as shown below with the left and right images in the figure below.

If the steering wheel is not going to get in the way of the installation, and the dashboard can have holes drilled into it, then the dashboard mounted camera should be used. Here the camera is standing upright with curved side of the camera pointing upwards as shown in the middle image in the figure below

If drilling holes to the A-Pillar is acceptable, then the A-Pillar mounted camera should be installed. The camera should be installed on the A-Pillar of the driver's side with the camera on its side and the curved top of the camera pointing outward towards the passenger's seat.

Disclaimer: Bracket Selection and installation position for the Driver Facing Camera may vary depending on host vehicle type. It is imperative that installation is carried out in-line with local vehicle laws and regulations and does not cause significant obstruction of the driver's view outside the vehicle.



Figure 42: Driver facing camera showing the different installation positions, left picture indicates left hand drive installation and right picture indicates right hand drive installation.

There are three different mounting brackets which define the three different methods of installing the driver facing camera to the vehicle. The camera has a G-sensor which enables it to automatically adjust its orientation in the upright position for different installation positions.

3.7.1 Windscreen Mounted Driver Facing camera

The windscreen mounted camera is ideal for use when it is required that the camera be mounted close to the A-Pillar without creating holes in the vehicle. The camera is to be mounted in the vertical orientation with the curved side of the camera pointing towards the passenger side.

Step 1: Power the device.

- a. Ensure that the device is powered on and connected to the SmartController app.
- b. Go to the preview section to view the real time footage of the powered camera.

Step 2: Determine the camera installation position whilst reviewing the real time image to ensure a fairly accurate position.

- a. Ensure that the camera is as close to the A-pillar as possible to reduce the obstruction to the driver's view.
- b. The base of the mounting bracket should be mounted parallel to the A-pillar.
- c. Ensure that the camera is positioned below the driver's eye line and point up towards the driver's eye.
- d. Ensure that the upper part of the driver's body (above the chest) can be seen in the preview image viewed on the SmartController app.
- e. Mark the top left and bottom right corners of the position of the bracket base with a temporary marker pen.

Step 3: Install the camera in position

- a. Clean the area where the base of the camera is to be positioned without cleaning off the marked locator points to ensure that the 3M pad of the base of the bracket can stick to the windscreen correctly without air bubbles forming between the glass and the adhesive base.
- b. Ensure that curved side of the camera is pointing towards the passenger side.
- c. Ensure that the notched side of the mounting bracket is facing upward to make adjusting the camera angle after mounting easy.

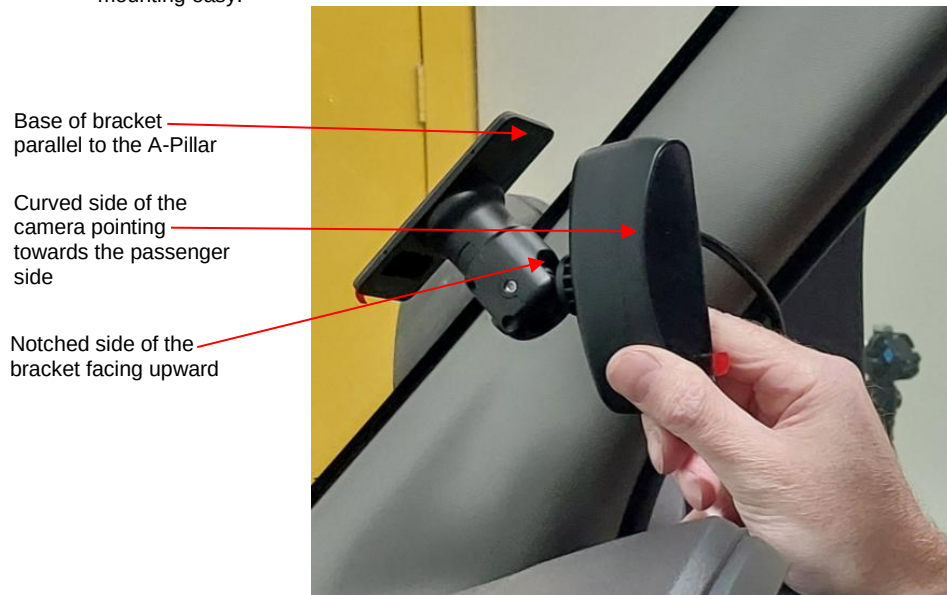


Figure 43: Installing the windscreen mounted DFC camera with the notched side of the bracket facing upward.

- d. Remove the tape on the adhesive surface of the base of the bracket, while ensuring that the bracket is parallel to the A-pillar, firmly place the bracket on the windscreen in the cleaned and marked out area and hold in place for 30 seconds to ensure a firm fitting. Firm force is needed for good contact and therefore adhesion between the windscreen and the 3M pad of the bracket. The force should be directed at the bracket to windscreen contact and not the camera to avoid moving the bracket from its desired position.

Step 4: Adjust camera lens position as needed

- a. Loosen the three silver grub screws that hold the ball in place to allow enough freedom to adjust the camera lens position. The ball allows 360 degrees of movement for the camera in the horizontal direction shown, 46 degrees of movement in the vertical upward direction and 24 degrees of movement in the vertical downward direction.

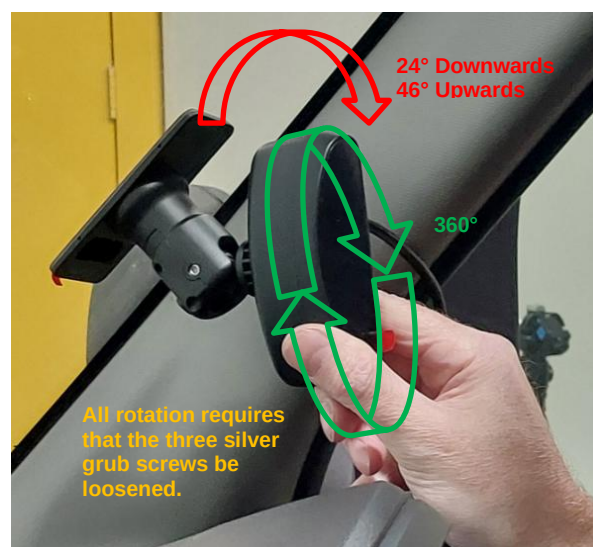


Figure 44: Windscreen Mounting option showing the options of rotation of the bracket

Note: the windscreen mounted camera is limited to a 70 degrees swivel in the vertical direction (24 degrees downward in the direction shown above and 46 degrees upwards, if attempt is made to swivel the camera to 90

degrees, the middle grub screw will get lost in the hole at the base of the ball for connecting the bracket to the camera.



Figure 45: Pictures showing base of the ball joint at 90-degree angle, the hole at the base of the ball is about 16mm deep while the middle grub screw is only 5mm long.

- b. Ensure that the camera is pointing up toward the driver's face
- c. Ensure that the driver's face is in the centre of the previewed SmartController image. Set grid to ON to aid positioning of the camera.
- d. Ensure that the light from the camera illuminates the driver's face.
- e. Ensure that there are no objects that may obstruct the driver's face or seatbelt features. Objects such as the steering wheel should not be visible in the image.
- f. Tighten the grub screws to hold the camera in place once the optimum position has been achieved.
- g. Peel off the protective plastic on the camera face to complete the installation.

3.7.2 Dashboard Mounted Driver Facing Camera

The Dashboard upright mounting option can be utilised when there is enough space, and there is no objection to drilling holes in the vehicle dashboard.

Step 1: Power the device

- a. Ensure that the device is powered on and connected to the SmartController app.
- b. Go to the preview section to view the real time footage of the powered camera.

Step 2: Determine the camera installation position whilst reviewing the real time image to ensure a fairly accurate position.

- a. Ensure that the dashboard is flat, and the camera can be easily fitted to it.
- b. Ensure that the camera is installed below the driver's eye line and point up towards the driver's eye.
- c. Ensure that the driver's face as previewed on the SmartController app is not obstructed by the steering wheel, the upper body of the driver (above the chest) can be seen in the previewed image and the driver's face appears in the centre of the previewed real time footage.
- d. It is recommended that the camera be installed with the curved side of the camera facing upwards.



Figure 46: Dashboard Installation direction, the Camera is standing in the upright position.

It is also recommended that the camera is installed such that the driver's face is in the centre of the image and that the distance between the line of sight of driver and the camera is between 50cm to 100cm.



Figure 47: Depicting the positioning of the driver during and after the camera is installed.

- e. Mark the mounting holes.

Step 3: Use the 3x self-tapping screws to secure the bracket to the dashboard.

Step 4: Adjusting the camera lens position

- a. After the base of the camera has been fixed to the dashboard using the self-tapping screws, get the driver to sit in the normal driving position facing forward (looking at the road ahead).
- b. It is recommended that the driver's face appear in the centre of the previewed real time footage and that the driver's face and body is in the upright position as should be if the lens is positioned correctly, adjust the lens as needed to achieve this position by loosening the hex head screws that hold the camera head in a fixed position. There is one screw behind the camera and the second one is on the side at the end of the middle bracket joining the camera to the base bracket.

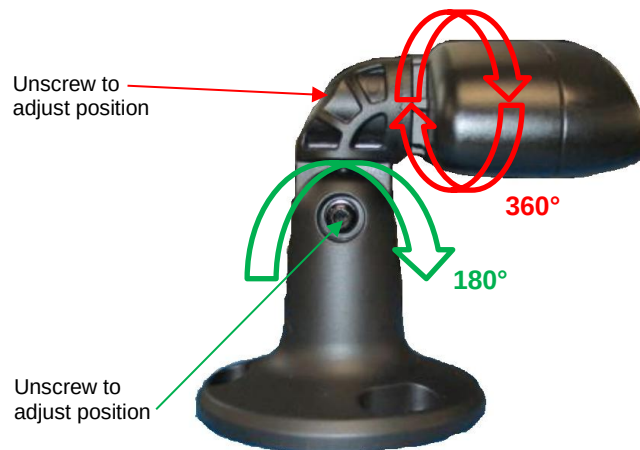


Figure 48: Dashboard Mounting method showing the degree of movement of the bracket to adjust the lens.

- c. Ensure that the lower edge of the screen is below the driver's chest, adjust the lens as needed to achieve this position.
- d. Ensure that the Infra-red light from the driver facing camera illuminates the driver's face and not the seatbelt or anything else when looking at the previewed image from the camera on the SmartController app.
- e. Ensure that there are no objects (such as steering wheel) obstructing the face and chest of the driver, so that the driver facial features can be triggered without issues.
- f. Once the installation is satisfactory, tighten the lens adjusting hex head screws to prevent the camera from moving from its optimum position.
- g. Peel off the protective plastic on the glass face of the camera to complete the installation.

3.7.3 A-Pillar Mounted Driver Facing Camera

This is the most versatile and preferred mounting option if using self-tapping screws is acceptable. It allows the camera to be mounted away from the windshield and the dashboard reduces the impact of the driver facing camera causing obstruction to the driver's view by the virtue of its location.

Step 1: Power the device.

- a. Ensure that the device is powered and connected to the SmartController app.
- b. Go to the preview tab of the SmartController app to view the real time footage of the powered camera.

Step 2: Determine the camera installation position whilst reviewing the real time image to ensure an optimal position.

- a. Ensure that the camera is installed below the driver's eye line and point up towards the driver's eye.
- b. Ensure that the upper part of the driver's body (above the chest) can be seen in the preview image viewed on the SmartController app.
- c. Mark the mounting holes.

Step 3: Use the self-tapping screws to secure the bracket to the A-pillar. Do not screw down the second self-tapping screw to the lower section of the base yet to make it easier to adjust the lens of the camera up and down.

WARNING: Check behind the A-Pillar for any wiring or sensitive equipment before attempting fitment.



Figure 49: A-Pillar mounted DFC camera using only on self-tapping screw to hold the camera in place

Step 4: Adjust camera lens position as needed

- a. After the base of the camera has been fixed to the A-Pillar, get the driver to sit in the normal driving position facing forward (looking at the road ahead).
- b. It is recommended that the driver's face appear in the centre of the previewed real time footage and that the driver's face and body is in the upright position as should be if the lens is positioned correctly, adjust the lens as needed to achieve this position by loosening the hex head screws that hold the camera head in a fixed position.



Figure 50: A-Pillar Driver Facing Camera showing the direction to turn the hex keys in order to unscrew the lens positioning hex head screws.

The A-Pillar mounted driver facing camera is unique because it can be adjusted on all three axis.



Figure 51: A-Pillar Driver facing camera showing the degree of movement of the camera head/top bracket piece joint when it hex head screw is loosened.



Figure 52: A-Pillar Driver Facing camera showing the degree of movement of the top piece and middle piece joint (red) and the Middle piece/base piece joint (green)

Note: The middle piece/Base joint rotation (green) should only be adjusted before installing the camera because the adjusting hex head screw is at the bottom of the base piece which will be difficult to access once the camera is installed.



Figure 53: A-Pillar Mounted Driver facing camera showing the adjusting hex head screw at the base of the bracket

- c. Ensure that the driver's face is in the centre of the previewed SmartController image. Set grid to on to aid positioning of the camera.
- d. Ensure that the infra – red light from the camera illuminates the driver's face when looking at the preview image from the SmartController app.
- e. Ensure that there are no objects that may obstruct the driver's face or seatbelt features. Objects such as the steering wheel should not be visible in the image.
- f. Once the installation is satisfactory, fix the second self-tapping screw to the lower section of the base of the bracket and tighten the hex head screws that hold the camera in place.



Figure 54: A-Pillar Driver facing camera showing self-tapping screw fixed on the lower section of the base of the bracket and the lens positioning hex head screws tightened.

- g. Peel off the protective plastic on the glass face of the camera to complete the installation.

4 Calibration

4.1 ADAS

To calibrate the IP AI cameras to be used with an MDR, installers need to use the SmartController app to fill in the required information. Please follow the steps below. Figure 58 MDR-HWU-01

1) Open SmartController App on mobile devices and connect to the MDR which takes AI cameras. For details on how to use the SmartController App, please refer to *MDR SmartController (6628) - Installation Guide V1.0 ENG WEB* in Brigade Product Support site.

2) Go to Preference – Alarm – AI App tab, as shown in *AI Algorithm Figure 55*.

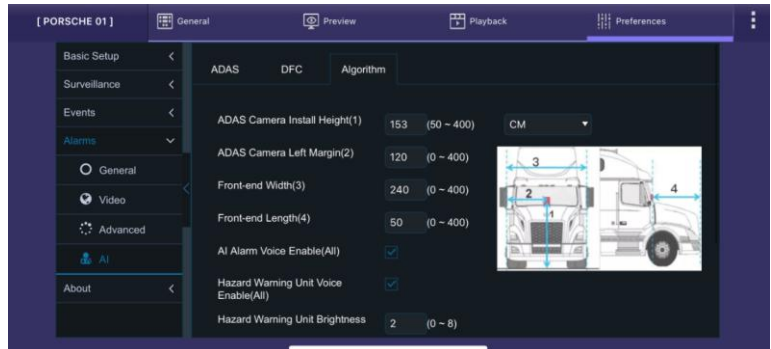
Fill in measurements as show in illustration.

ADAS Camera Install Height (1): this is the height from the middle of the ADAS camera lens to the ground.

Left margin (inward facing) (2): this is the horizontal distance between the device and the left end of the vehicle body.

Front-end Width (3): this is the vehicle body width.

Front-end Length (4): this is the distance between the device and the front end of the vehicle, which is the distance between the ADAS camera lens and the license plate of the vehicle.



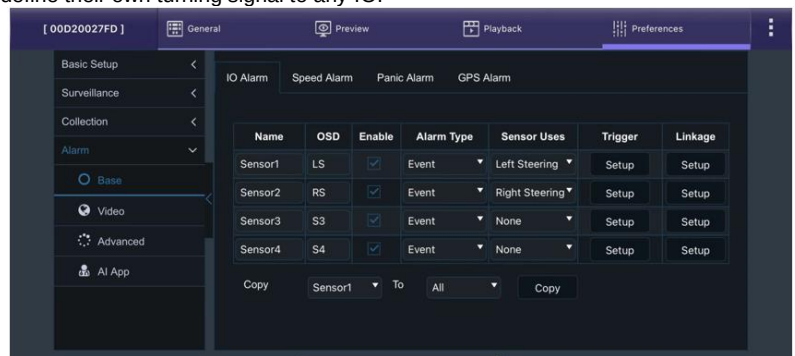
AI Algorithm Figure 55

3) To make sure the LDW function works as expected, the system must define left / right turning signal. Here we take IO 1 and IO 2 and left and right turning signal as an example. In reality, installers can define their own turning signal to any IO.

Go to the IO Alarm settings on the SmartController app which is: *SmartController app* → *Preference* → *Alarm* → *Base* → *IO Alarm*.

Enable IO1 and IO2 alarm. Set IO1 as **Left Steering**; IO2 as **Right Steering** in **Sensor Usage**, this will prevent the LDW alarm from sounding if the driver has activated the correct turn indicator.

Note: If the customer does not want to receive IO1 and IO2 turn indicator alarms in the alarm report, or MDR-Dashboard, the installer can set them to **Event** which maintains the functionality but means they are not reported to any platform as an alarm.



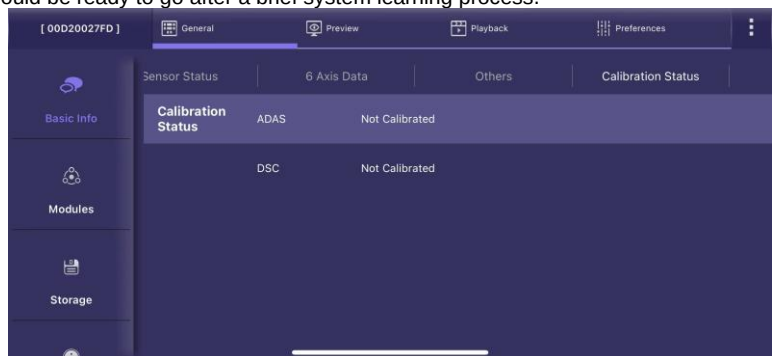
SmartController App IO Alarm Figure 56

4) Finally, once the MDR has been fully setup, the system should be ready to go after a brief system learning process.

The SmartController App provides the interface to check whether the current AI camera has been successfully calibrated. By default, the camera won't be ready before its first run.

The ADAS (IP-FFC-AI-01) will start the auto-calibration when the vehicle speed reaches 10mph or 15km/h. The auto-calibration can take from seconds to minutes time to finish, depending on road and environment condition of that day.

The Auto-calibration will be executed dynamically whenever parameters are updated or the road condition changes, to allow the camera to quickly adapt to the latest conditions and make the right judgements.



Auto-Calibration Status Figure 57

4.2 DFC

The driver facing camera (DFC) will auto-calibrate without needing any intervention after the installation is completed. It is therefore important that the camera is installed properly.

The DFC auto-calibration will start when the vehicle speed reaches 12mph (20km/h) and it will be completed once the driver's face has been detected for approximately 5 minutes. The calibration will only happen once unless there are changes to the Calibration Parameters. In this case the calibration will re-start automatically. The calibration status can be checked using the SmartController App: SmartController General - Basic Info – Calibration Status menu.

5 MDR-HWU-01 – Hazard Warning Unit

Hazard Warning Unit (HWU) is a display accessory which must be use with a host device, such as MDR 600 series and AI Dashcam series. HWU itself does not contain any AI process capabilities; it is controlled by the host. When host received AI alarms, it will pass information to the HWU which will correspondingly display the correct alert symbol or beep sound to notify the end user.

5.1 Product Hardware



Figure 58 MDR-HWU-01

5.2 Product Features

5.2.1 Basic Features

- 128 x 128 display resolution
- Supports display alarms for LDW, FCW, HMW, Driver Fatigue, Phone Call, Smoking, Driver Distraction, No Driver, Seatbelt, Yawning, Infrared Blocking
- Brightness adjustable from 0-8 level to support both day and nighttime use. Details, please see MDR-64XXX-X-XXX(XX) (Various) Installation & Operation Guide Section 5.1.8.1.
- Internal buzzer for audible alerts for AI alarms
- Adjustable display angle for different mounting positions.

5.2.2 Display Features

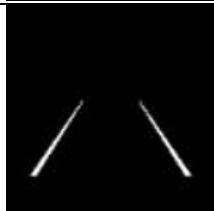
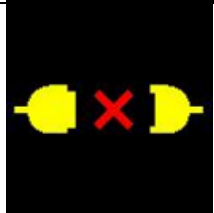
5.2.2.1 AI Display

- The HWU display is controlled by the host device which is either MDR or AI Dashcam. If any alarms have been disabled in the host, then the HWU will not display visual or audible alerts for those disabled alarms.
- HWU audible alerts can be individually enabled or disabled for each alarm type.
- The examples in the table below are based on real world scenarios where all alerts have been enable.

AI Alarm types	Alarm Levels	Display	Audible Alerts
LDW	Level 1 Specific trigger conditions can be set in the SmartController.		Beep once
	Level 2 Specific trigger conditions can be set in the SmartController.		Beep once
FCW	Level 1 / Level 2		Continuous beeping
HMW	Level 1 / Level 2		Beep once

Drive Fatigue	Level 1 / Level 2		Continuous beeping
Phone Call	Level 1 / Level 2		Beep once
Smoking	Level 1 / Level 2		Beep once
Driver Distraction	Level 1 / Level 2		Beep once
No Driver	Level 1 / Level 2	 	Beep once After 2 seconds
Seatbelt	Level 1 / Level 2		Beep once
Yawning	Level 1 / Level 2		Continuous beeping
Infrared Blocking	Level 1 / Level 2		Beep once

5.2.2.2 Status Display

Status	Display
System initialisation icon The system is initialising.	
System Activated Icon The system has been activated.	
System Offline Icon The system is in an inactive state, or in the process of being upgraded.	
Multi-information display TTI (time to impact), Pedestrian collision warning (upper centre), Driving behaviour detection Alarm (upper right corner). Can be displayed simultaneously on the screen.	

5.3 Kit Content



Hazard Warning Unit
MDR-HWU-U



QR Link Card
MDR-HWU-01-QR Link Card



Cleaning pad
CLEANING PAD

5.4 Optional Spare / Accessories



3M Adhesive Pad
MDR-HWU-3M-PAD



3 / 5 / 7-meter Extension Cable
MDR-HWU-L603 / 5 / 7-01

5.5 Connection Diagram

5.5.1 MDR 641 Series Connection Diagram

For connection to the MDR 641, adapter cable MDR-AC-HWU-01 which is 12-pin female connector 6-pin female mating face.



Figure 59 MDR-HWU-U connection diagram to MDR 641 with transfer cable

5.5.2 MDR 644 Series Connection Diagram

For connection to the MDR 644, the HWU can be directly plugged into the MDR 644 without additional adaptors.



Figure 60 MDR-HWU-U connection diagram to MDR 644 direct connection

5.5.3 AI Dashcam Series Connection Diagram

For connection to the AI Dashcam (DC-204-AI), An adapter cable HWU-CB-01 is needed.

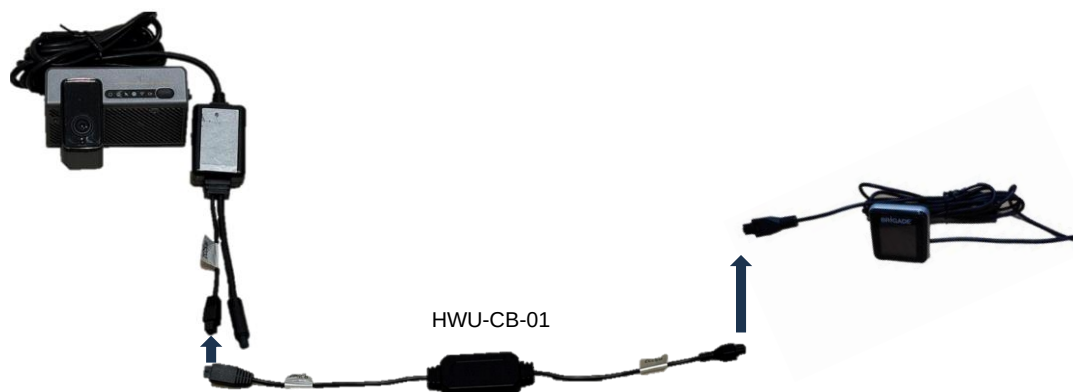


Figure 61 MDR-HWU-U connection diagram to AI Dashcam (DC-204-AI) with transfer cable (HWU-CB-01)

5.6 Installation

5.6.1 Product Hardware

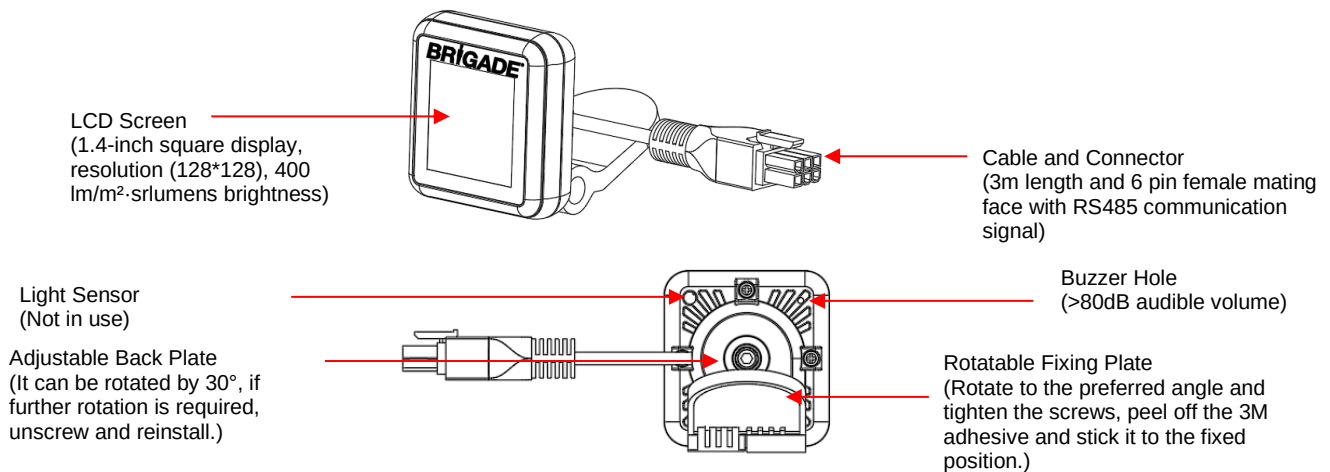


Figure 62 MDR-HWU-01 Hardware Overview

5.6.2 Installation and Setup

Before beginning the installation, ensure finding a spot where it should be close to the driver and not be blocked by any device, such as steering wheel, it should not block driver's view for normal driving, it should not expose to sun lights in case of reflexion and prepared a M3*0.5 Philips screwdriver, cleaning pad (see section 5.2.2.2 for details). The cleaning pad will be used for removing dust to clean the installation spot. After cleaning the spot peel off the 3M pad (see section 5.4 for details) on the bracket and stick it on the surface, tightly press it to make the 3M surface contact with the spot as much as possible to prevent it from falling off. The screwdriver will be used for adjusting rotatable fixing plate, if the installation surface is not horizontal, installers can loose the back screw to rotate the Hazard Warning Unit display screen, fit for their application.

Hazard Warning Unit's tail cable is 3 metres long. If this is not long enough, installers can choose a suitable extension cable to use (see section 5.4 for details). Connecting to different host devices see section 0 for details.

6 Appendices

6.1 Upgrade

All the equipment listed in this manual can be upgraded via MDR. Please prepare upgrade files and save it to a flash drive in this path: 'root directory'/upgrade. Using this folder structure, the MDR will be able to locate the upgrade file.

For FFC and DFC, they can be upgraded via the **IPC Upgrade**. To upgrade, ensure the camera is physically connected with the MDR and powered on. After entering the **IPC Upgrade** interface, select the correct channel which has been assigned to the IP AI camera. The MDR will be able to recognize the camera model and verify the upgrade file, then apply the upgrade to the device if the verification is successful.

For the HWU upgrade, it can be done via the **Hazard Warning Unit Upgrade** interface. After connecting the HWU with the MDR, click on the **Upgrade** button, the MDR will verify the HWU and upgrade file, then execute if the verification is successful.



Upgrade Figure 63

7 Testing and Maintenance

7.1 Operator Instructions

This information is addressed to the operator of the vehicle where a Brigade MDR 600 Series System is installed:

- 1) The Brigade MDR 600 Series is intended to be used as a mobile digital recorder. Drivers and operators should not interact with the MDR setup menu. The mouse should be strictly used by trained technicians when the vehicle is stationary.
- 2) Testing and inspection of the system should be carried out in accordance with this manual. The driver or operator is responsible for ensuring the Brigade MDR 600 Series System is powered on and working as intended.
- 3) Operators are strongly recommended to check the system status frequently to ensure correct operation.
- 4) Improved safety can be achieved when used in conjunction with Brigade's camera-monitor systems. This may allow triggering camera views and providing additional vehicle information during manoeuvring. It is necessary to read, understand and follow all instructions received with the Brigade MDR 600 Series System.
- 5) The Brigade MDR 600 Series System for digital recording is intended for use on, but not limited to commercial vehicles and machinery equipment. Correct installation of the system requires a good understanding of vehicle electrical systems and procedures along with a proficiency in installation.
- 6) Keep these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

7.2 Maintenance and Testing

This information is addressed to the operator for maintenance and testing of a vehicle with the Brigade MDR 600 Series System installed. This is also to familiarise the operator with the features and behaviour of the system. More frequent inspections should be performed in cases where:

- The vehicle is operating in a particularly dirty or harsh environment.
- The operator has reason to suspect the system is not working or has been damaged.

Procedure:

- 1) Clean the camera lens and housing of any accumulation of dirt, mud, snow, ice or any other debris.
- 2) Visually inspect the cameras and MDR unit and verify that they are securely attached to the vehicle and are not damaged.
- 3) Visually inspect the system's cables and verify that they are properly secured and not damaged.
- 4) Ensure the area in front of the cameras is clear of obstacles and has the right coverage area to view objects.

If any of the following tests fail, follow the appropriate sections of this instruction guide or contact Brigade if still in doubt.

- 5) Activate the Brigade MDR 600 Series System and verify the LEDs (on the MDR unit front) are illuminated, it should take approximately 60 seconds for HDD recordings to start after a file-system check.
- 6) This test can only be performed when the MDR video output is displayed on a Brigade monitor. Ensure that both the SD card and HDD are recording. Recording is shown with an SD card symbol and HDD symbol.
- 7) Other tests can be performed depending on the configuration. For instance, if Video Loss is activated, any disconnected or malfunctioning camera is detected.
- 8) Sensor trigger activation can also be diagnosed. For instance, if a trigger is setup to turn a channel on full screen or set an alarm. This will be identified by the channel occupying the full screen or a red-letter A (if a Brigade monitor is connected).
- 9) GPS, G-Sensor, Supply Voltage and Heater functioning can be accessed via SYS INFO using the mouse (if a monitor is connected).

8 Approvals

CE

UNECE Regulation No. 10 Revision 6 ("E-marking")

FCC

IC

EU Declaration of Conformity:

The full text of the EU and UKCA declaration of conformity for each product are available at the following internet address: www.brigade-electronics.com

9 Glossary

- 3G** – Third Generation
4G – Fourth Generation
AC – Adaptor Cable
ADPCM – Adaptive Differential Pulse-code Modulation
G711U – Narrowband audio codec
G711A – Narrowband audio codec
Alarms – An “EVENT” that has been configured (in the MDR unit settings) to be an alarm. Alarms are identified as orange video channel data on the playback timeline. These are displayed in the real-time alarm log in the MDR-Dashboard and MDR Mobile Apps. Alarms can generate email alerts and trigger automatic downloads (dependant on MDR-Dashboard configuration).
AHD – Analog High Definition
Automatic Download – A download that is set up in the MDR-Dashboard to automatically download data related to an occurring “Alarm” or “Event” between user-defined times. Configured under Download in MDR-Dashboard.
APN – Access Point Name
AVI – Audio Video Interleaved
BD – Blind Detection
CBR – Constant Bit Rate
CE – Conformité Européenne
CH – Channel
CHAP – Challenge Handshake Authentication Protocol
CIF – Common Intermediate Format (¼ D1 format)
CPU – Central Processing Unit
CU – Control Unit
D1 – D1 is full standard resolution for 25FPS (PAL) and 30FPS (NTSC)
DFC – Driver Facing Camera
DHCP – Dynamic Host Configuration Protocol
DS – Docking Station
DST – Daylight Saving Time
EDGE – Enhanced Data GSM Environment
EIA – Electronic Industries Alliance
Events – An activation of an input e.g., Sensor input (trigger 1-8), G Sensor, Over speed etc. Events are identified as red vertical lines on the playback timeline. These are not shown in the real-time alarm log.
EXP – Expansion
FCC – Federal Communications Commission
FCW – Front Collision Warning
FFC – Forward Facing Camera
FPB – Fireproof box
FPS – Frames per Second
FTP – File Transfer Protocol
GB – Gigabyte
GHz – Gigahertz
GND – Ground
GPIO – General Purpose Input/output
GPRS – General Packet Radio Service
GPS – Global Positioning System
GSC – G-sensor Cable
G-Sensor - measure of acceleration/shock of the vehicle
GSM – Global System for Mobile Communications
GUI - Graphical user interfaces
H.264 – Video compression standard
H.265 - Video compression standard
HD1 – Half Definition compared to Full Definition (See D1)
HD – High Definition
HDD – Hard Disk Drive
HSDPA – High Speed Downlink Packet Access
HSPA – High Speed Packet Access
HSUPA – High Speed Uplink Packet Access
HTTP – Hypertext Transfer Protocol
HTTPS – Hypertext Transfer Protocol Secure
HMW – Headway Monitoring Warning
HWU – Hazard Warning Unit
IC – Industry Canada
ID – Identification
IO – Input/output
iOS – iPhone Operating System (Apple Inc.)
IP – Internet Protocol
IR – Infra-red
IT – Information technology
Km/h – Kilometres per hour
LAN – Local Area Network
LDW – Lane Departure Warning
LED – Light Emitting Diode
MAC – Media Access Control
MB – Megabyte
MCU – Mobile Caddy Unit
MD – Motion Detection
MDR – Mobile Digital Recorder
MHz – Megahertz
MPH – Miles per hour
NET – Network
NTSC – National Television System Committee
ONVIF – Open Network Video Interface Forum
OSD – On-screen Display
PAL – Phase Alternating Line
PAP – Password Authentication Protocol
PC – Personal Computer
PN – Part Number
PTZ – Pan, Tilt and Zoom
PWR – Power
REC – Record
RES – Resolution
RP – Remote Panel
RPC – Remote Panel Cable
RTSP – Real Time Streaming Protocol
S/N – Serial Number
Scheduled Download – A download that is manually setup from in the MDR-Dashboard (to be downloaded when the selected MDR connects to the server). Configured under Server in MDR-Dashboard.
SD – Secure Digital
SIM – Subscriber Identity Module
SMTP – Simple Mail Transfer Protocol
SNTP – Simple Network Time Protocol
SPD – Speed
SQL – Structured Query Language
SSL – Secure Sockets Layer
TB – Terabyte
TCP – Transmission Control Protocol
TFTP – Trivial File Transfer Protocol
TIA – Telecommunications Industry Association
TRIG – Trigger
UDP - User Datagram Protocol
UKCA - UK Conformity Assessed
UNECE – United Nations Economic Commission for Europe
USB – Universal Serial Bus
V – Voltage
VBR – Variable Bit Rate
VGA – Video Graphics Array
VIC – Video Input Cable
VL – Video Loss
VOC – Video Output Cable
W – Watt, standard unit of power
WCDMA – Wide Code Division Multiple Access
Wi-Fi – Wireless Fidelity
WEP - Wired Equivalent Privacy
WPA - Wi-Fi Protected Access
WPA2-PSK - Wi-Fi Protected Access II
WPA2-Enterprise - Wi-Fi Protected Access II Enterprise

10 Disclaimer

Mobile digital recorder systems are an invaluable driver aid but do not exempt the driver from taking every normal precaution when conducting a manoeuvre. No liability arising out of the use or failure of the product can in any way be attached to Brigade or to the distributor.

Dénégation

Les enregistreurs numériques portables sont une aide précieuse pour le conducteur, mais celui-ci doit toutefois prendre toutes les précautions nécessaires pendant les manœuvres. Brigade ou ses distributeurs n'assument aucune responsabilité résultant de l'utilisation ou d'un défaut du produit.

Haftungsausschluss

Mobile Datenaufzeichnung Systeme sind für den Fahrer eine unschätzbare Hilfe, ersetzen aber beim Manövrieren keinesfalls die üblichen Vorsichtsmaßnahmen. Für Schäden aufgrund der Verwendung oder eines Defekts dieses Produkts übernehmen Brigade oder der Vertriebshändler keinerlei Haftung.

Condizioni di Utilizzo

I sistemi di registrazione digitale mobile costituiscono un prezioso ausilio alla guida, ma il conducente deve comunque assicurarsi di prendere tutte le normali precauzioni quando esegue una manovra. Né Brigade né il suo distributore saranno responsabili per eventuali danni di qualsiasi natura causati dall'utilizzo o dal mancato utilizzo del prodotto.

Aviso legal

Sistemas móviles grabadora digital son una ayuda inestimable driver pero no exime al conductor de tomar todas las precauciones normales al realizar una maniobra. Ninguna responsabilidad que surja del uso o fallo del producto puede de alguna manera acoplarse a la brigada o al distribuidor.

Declinação de responsabilidade

Celular gravador digital de sistemas são uma inestimável driver de auxílio, mas não isentam o driver de tomar todas normal precaução ao realizar uma manobra. Nenhuma responsabilidade decorrente da utilização ou falha do produto pode de qualquer maneira ser anexado ao de bombeiros ou para o distribuidor.

Verwerping

Mobiele digitale recorder systemen zijn een waardevolle hulp voor de bestuurder, maar stelt de bestuurder niet vrij van de normale voorzorgsmaatregelen bij het uitvoeren van een manoeuvre. Geen aansprakelijkheid voortvloeiend uit het gebruik of falen van het product kan op één of andere manier aan Brigade of aan de distributeur worden toegekend.

Отказ от обязательств

Системы видеорегистрации оказывают водителю неоценимую помощь при маневрировании, но не освобождают его от обязанности соблюдения обычных мер предосторожности. В ином случае компания Brigade или дистрибьютор не несет ответственность, возникающую в ходе использования или по причине неисправности данного продукта.

Hatırlatma

Mobil Sayısal Kayıt Cihazları sürücünün önemli bir yardımcısı olmakla birlikte, manevra esnasında sürücü bir kaza olmaması için her türlü önlemi almalıdır. Brigade veya bölgesel dağıtıcıları yapılacak yanlış bir uygulama ve sonucunda oluşabilecek maddi ve/veya manevi kayıplardan sorumlu tutulamaz.

Uwaga

Systemy mobilnych cyfrowych rejestratorów są niezastąpioną pomocą dla kierowcy, ale jego posiadanie nie zwalnia kierowcy z zachowania szczególnej ostrożności podczas manewrów. Żadna kolizja drogowa ani jej skutki nie mogą obciążać producenta urządzeń oraz jego dystrybutorów.

Specifications subject to change. Sous réserve de modifications techniques. Änderungen der technischen Daten vorbehalten. Specifiche soggette a variazioni. Las especificaciones están sujetas a cambios. Wijzigingen in specificaties voorbehouden. As especificações estão sujeitas a alterações. Спецификация может изменяться. Brigade Electronics belirttiği özellikleri haber vermeksizin istediği zaman değiştirebilir. Specyfikacja techniczna może ulec zmianie.

