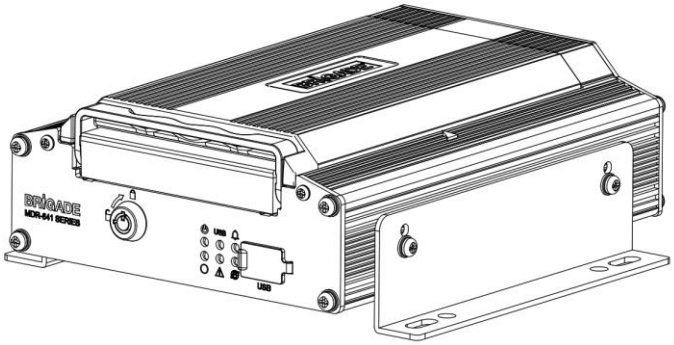
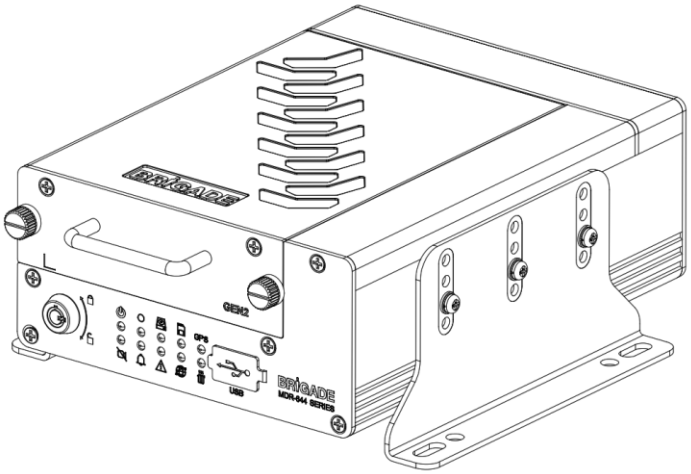
Mobile Digital Recorder

MDR 600 Series

MDR-641XX-X-XXX(XX)



MDR-644XX-X-XXX(XX)



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 MDR 600 Series Technology

Brigade's MDR 600 Series advanced Mobile Digital Recorders (MDRs) are designed to record and playback various channels. The system uses Analog High Definition (AHD), Phase Alternating Line (PAL) or National Television System Committee (NTSC) television systems. The resolution can be CIF, WCIF, HD1, WHD1, D1, WD1, 720P, 960P or 1080P. Information related to recording parameters, alarms and trigger status can be recorded along with speed, location and G-Force data. In addition, data related to the unit itself such as voltage and temperature, are recorded and plotted graphically in MDR Software (MDR-Dashboard 6.0 and MDR-Player 6.0). This information is called metadata.

Recordings can be searched, viewed and exported (clipped and saved locally) using MDR-Dashboard 6.0 software. This allows users to access all the vehicle's travel information, including route tracking. Recordings can be easily exported in three different ways: as a simple audio/video MP4 file playable by consumer media players; as native proprietary format clips or as a password protected .exe file with an embedded MDR-Player 6.0.

The main storage unit is a large capacity Conventional Magnetic Recording Hard Disk Drive (CMR HDD) or Solid-State Drive (SSD). The secondary storage is an internal SD (Secure Digital) card for sub-stream, HDD mirror (simultaneous) or alarm recording. The SD card stores video data and frame information only, in chosen image resolution and frame rate. This is useful in extreme scenarios where the primary storage media reaches its limitations (e.g., an HDD/SSD write error during a collision). The SD card availability is model dependent, refer to MDR Series Models table below.

Mobile network and Wi-Fi settings found in this manual relate to wireless products as described below. These features can be attained by upgrading the MDR 600 Series units. Current existing MDR 600 Series models allow for mobile network/Wi-Fi upgrades via the Ethernet port on the rear panel to support an external network/Wi-Fi dongle.

To complete firmware upgrades, configuration imports/exports and video exports, a bus-powered hub (minimum 2 ports) is required.

It is imperative that Brigade MDRs 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.

Table 1: Description of MDR 600 Series Models:

#	MODEL	NUMBER OF CHANNELS	HDD CAPACITY	SD CAPACITY	GPS	MOB. NET	WI-FI
(1)	MDR-641-0.5-CMR	4 (Analogue) + 1(IP)	500GB	-	✓		
(2)	MDR-641G-0.5-CMR	4 (Analogue) + 1(IP)	500GB	-	✓	✓	
(3)	MDR-641GW-0.5-CMR	4 (Analogue) + 1(IP)	500GB	-	✓	✓	✓
(4)	MDR-641G-0.5-CMR(NA)	4 (Analogue) + 1(IP)	500GB	-	✓	✓	
(5)	MDR-641GW-0.5-CMR(NA)	4 (Analogue) + 1(IP)	500GB	-	✓	✓	✓
(6)	MDR-641-1-CMR	4 (Analogue) + 1(IP)	1TB	-	✓		
(7)	MDR-641G-1-CMR	4 (Analogue) + 1(IP)	1TB	-	✓	✓	
(8)	MDR-641GW-1-CMR	4 (Analogue) + 1(IP)	1TB	-	✓	✓	✓
(9)	MDR-641G-1-CMR(NA)	4 (Analogue) + 1(IP)	1TB	-	✓	✓	
(10)	MDR-641GW-1-CMR(NA)	4 (Analogue) + 1(IP)	1TB	-	✓	✓	✓
(11)	MDR-641-1-SSD	4 (Analogue) + 1(IP)	1TB	-	✓		
(12)	MDR-641G-1-SSD	4 (Analogue) + 1(IP)	1TB	-	✓	✓	
(13)	MDR-641GW-1-SSD	4 (Analogue) + 1(IP)	1TB	-	✓	✓	✓
(14)	MDR-641G-1-SSD(NA)	4 (Analogue) + 1(IP)	1TB	-	✓	✓	
(15)	MDR-641GW-1-SSD(NA)	4 (Analogue) + 1(IP)	1TB	-	✓	✓	✓
(16)	MDR-641-2-SSD	4 (Analogue) + 1(IP)	2TB	-	✓		
(17)	MDR-641G-2-SSD	4 (Analogue) + 1(IP)	2TB	-	✓	✓	
(18)	MDR-641GW-2-SSD	4 (Analogue) + 1(IP)	2TB	-	✓	✓	✓
(19)	MDR-641G-2-SSD(NA)	4 (Analogue) + 1(IP)	2TB	-	✓	✓	
(20)	MDR-641GW-2-SSD(NA)	4 (Analogue) + 1(IP)	2TB	-	✓	✓	✓
(21)	MDR-644-1-CMR	4 (Analogue) + 8 (IP)*	1TB	64GB	✓		
(22)	MDR-644G-1-CMR	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	
(23)	MDR-644GW-1-CMR	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	✓
(24)	MDR-644G-1-CMR(NA)	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	
(25)	MDR-644GW-1-CMR(NA)	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	✓
(26)	MDR-644-0.5-SSD	4 (Analogue) + 8 (IP)*	500GB	64GB	✓		
(27)	MDR-644G-0.5- SSD	4 (Analogue) + 8 (IP)*	500GB	64GB	✓	✓	
(28)	MDR-644GW-0.5- SSD	4 (Analogue) + 8 (IP)*	500GB	64GB	✓	✓	✓
(29)	MDR-644G-0.5-SSD(NA)	4 (Analogue) + 8 (IP)*	500GB	64GB	✓	✓	
(30)	MDR-644GW-0.5- SSD(NA)	4 (Analogue) + 8 (IP)*	500GB	64GB	✓	✓	✓
(31)	MDR-644-1-SSD	4 (Analogue) + 8 (IP)*	1TB	64GB	✓		
(32)	MDR-644G-1- SSD	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	
(33)	MDR-644GW-1- SSD	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	✓
(34)	MDR-644G-1- SSD(NA)	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	

(35)	MDR-644GW-1- SSD(NA)	4 (Analogue) + 8 (IP)*	1TB	64GB	✓	✓	✓
(36)	MDR-644-2-SSD	4 (Analogue) + 8 (IP)*	2TB	64GB	✓		
(37)	MDR-644G-2- SSD	4 (Analogue) + 8 (IP)*	2TB	64GB	✓	✓	
(38)	MDR-644GW-2- SSD	4 (Analogue) + 8 (IP)*	2TB	64GB	✓	✓	✓
(39)	MDR-644G-2-SSD(NA)	4 (Analogue) + 8 (IP)*	2TB	64GB	✓	✓	
(40)	MDR-644GW-2-SSD(NA)	4 (Analogue) + 8 (IP)*	2TB	64GB	✓	✓	✓

*8x IP channel input including 4x direct connect on MDR rear panel and another 4x channels require external 4-Port PON Switch.

Warning: Prior to attempting the system setup, please ensure the MDR 600 Series 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.

1.1 Product Features

1.1.1 General Specification of MDR 600 Series

Models	MDR-641XX-X-XXX(XX)	MDR-644XX-X-XXX(XX)
Main Storage	500GB / 1TB / 2TB HDD or SSD with anti-vibration mounting (2TB maximum)	500GB / 1TB / 2TB HDD or SSD with anti-vibration mounting (2TB maximum)
Sub-Storage	Not Applicable	Industrial grade 64GB (256GB maximum) internal SD card for mirror, sub-stream and alarm recording
Recording Resource	Simultaneous 5 channel recording up to: AHD / CVBS: 1080P @ 11fps (PAL) / (NTSC) for 4 channels IP (direct connection only): 1080P @ 30fps for 1 channel	Simultaneous 8 channel recording up to: AHD / CVBS: 1080P @ 11fps (PAL) / (NTSC) for 4 channels IP (direct connection only): 1080P @ 30fps for 4 channels IP (with direct connection and an extra 4-Port PON Switch) 1080P @ 30fps for 8 channels
Inputs	5x Select video connectors for camera connection (video & audio)	8x Select video connectors for camera connection (video & audio)
Weight	2.9Kg approx.	3.7Kg approx.

1.1.2 Common Features of MDR 600 Series

- Internal anti-vibration mountings for the HDD or SSD
- Embedded super-capacitor for finalisation of recording after unexpected power interruption (up to 10 seconds)
- Individual channel configurations for recording resolution, frame rate and quality
- Anti-tamper feature via digital password
- Display split 1/4/9 channels
- Optional EIA/TIA 485 (RS485) for external Remote Status & Interface Panel
- Operation log files for troubleshooting
- Built-in 6-axis G-Sensor
- External GPS antenna for location monitoring and tracking
- I/O: 8x configurable trigger inputs (9V threshold, high or low activation modes); 2x trigger outputs (12V, 500mA max)
- Pre-alarm recording 30 seconds to 60 minutes and Post-alarm recording 0 to 60 minutes.
- Video recording quality selectable from 8 different levels
- Video/Audio compression H.264/H.265/ADPCM/G711U/G711A
- Normal, Alarm or Timer recording modes
- Alarm recordings configurable for trigger, speed, G-Force, video loss, motion detection, blind detection, panic button, geo-fencing and HDD/SD errors
- AI camera support for ADAS and DSM functions
- Low voltage protection with configurable shut-down delay and minimum restart voltage
- Ethernet 10/100M RJ45 port for configuration, live view, playback and video download
- Mouse for configuration and recording/event search'
- Shut-down delay configurable from 0 seconds to 24 hours or Non-Stop
- 12V / 24V Power Input
- Network Protocols supported: TCP/IP, UDP, DHCP, TFTP, FTP, HTTP/HTTPS, SNTP, ONVIF, RTSP

2 Kit Contents

2.1 MDR 600 Series Kits

2.1.1 MDR-644XX-X-XXX(XX)

MDR 600 Series 8 Channel Control Unit with 500GB / 1TB / 2TB SSD or HDD, 4G, Wi-Fi & 64GB SD Card (depending on model)

2.1.2 MDR-641XX-X-XXX(XX)

MDR 600 Series 5 Channel Control Unit with 500GB / 1TB / 2TB SSD or HDD, 4G & Wi-Fi (depending on model)

2.1.3 Common Accessories

MDR GPS Antenna
MDR-ANT-GPS-03

MDR Mobile Network Antenna
MDR-ANT-MOB-01
(Depending on model)

MDR Wi-Fi Antenna
MDR-ANT-Wi-Fi-01
(Depending on model)

MDR Mouse (for reference)
MDR-MOUSE-01

MDR Security Key
MDR-KEY-01

MDR 600 Series Short Installation and Operation Guide
MDR-600-SIG-EN

MDR Vehicle Warning Sticker
MDR-VWS

2.1.4 MDR 641 Series Accessories

MDR Input / Output Cable
MDR-IO-03

MDR Power Cable
MDR-PWR-02

MDR Brackets
MDR-BKT-02

4x MDR Bracket Fixing Screws
MDR-BKT-FIX-02

CMS Adapter Cable
AC-075

2.1.5 MDR 644 Series Accessories

MDR Input / Output Cable
MDR-IO-02

MDR Power Cable
MDR-PWR-01

MDR Brackets
MDR-BKT-01

7x MDR Bracket Fixing Screws
MDR-BKT-FIX-01

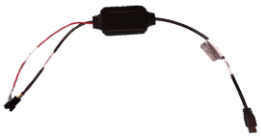
MDR USB A to B Cable (USB 3.0)
MDR-USB-B-02

2.2 Optional Accessories

2.2.1 Remote Status & Interface Panel

MDR Remote Status & Interface Panel
MDR-RP-02-P

MDR 4m Cable for Remote Status & Interface Panel
MDR-04RPC



MDR Adapter Cable for Remote Panel
MDR-AC-ACC-01
(only needed for MDR 641 Series)

2.2.2 MCU Reader

MDR MCU Reader
MDR-MCU-R-01-R
(only needed for MDR 641 Series)

MDR USB 3.0 Cable, Type A to Type A Connectors
MDR-USB-A-01
(only needed for MDR 641 Series)

2.2.3 MDR SmartController

MDR SmartController
MDR-SMACON

2.2.4 Adapter Cables

MDR Adapter Cable for Hazard Warning Unit
MDR-AC-HWU-01
(only needed for MDR 641 Series)

MDR CAN Cable
MDR-CAN-01
(for future use with MDR 644 Series when CAN functionality is available)

2.2.5 Optional Secondary Storage Medium

64GB Industrial Grade SD Card Class 10
SD-64GB-IND

MDR Fireproof Box with 32GB SD Card
MDR-400-FPB-32
(only needed for MDR 644 Series)

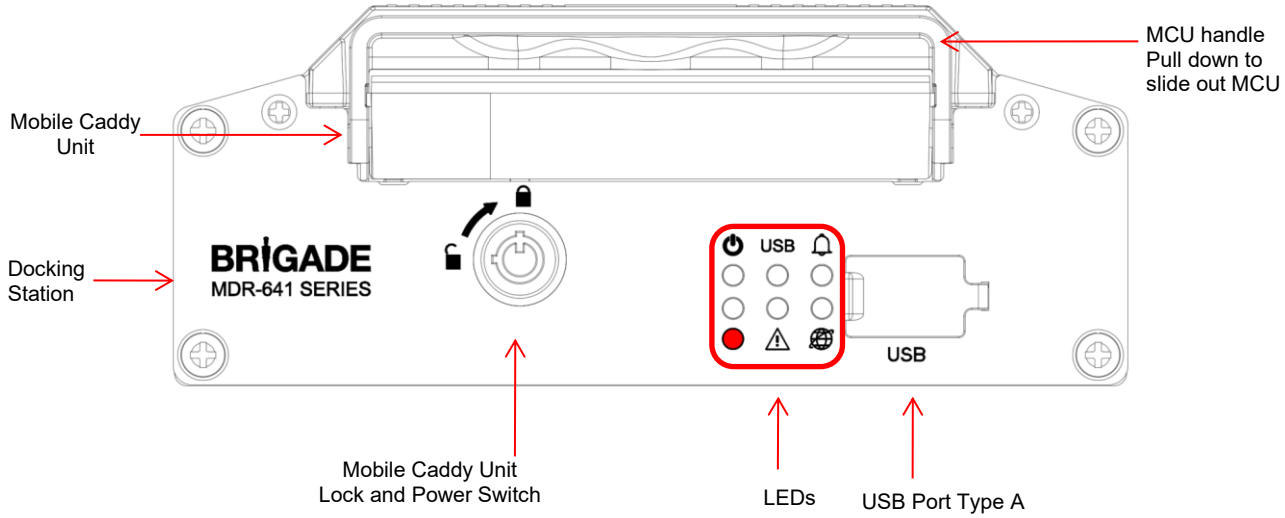
3 Hardware Installation

Warning

- **Connecting any input or output wires to high voltages may damage the product. Brigade will not be responsible for any damage caused due to negligence.**

3.1 MDR-641 Hardware

3.1.1 MDR-641XX-X-XXX(XX) Front View



MDR-641XX-X-XXX(XX) Front View Figure 1

Power - Blue LED
ON: Power on or sleep mode
OFF: Power off

USB - Yellow LED
ON: External storage medium detected
OFF: No external storage medium detected

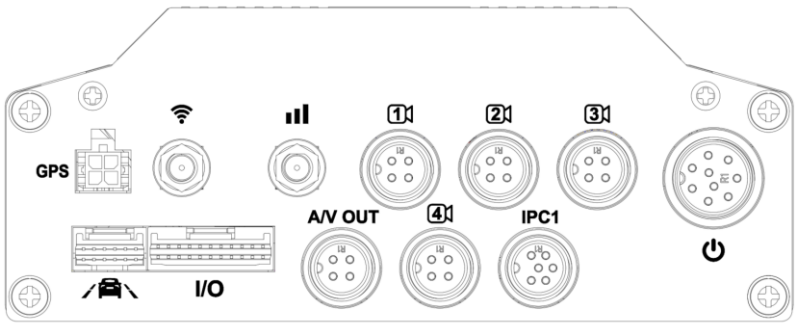
Alarm - Red LED
ON: When an alarm is triggered, lasts for entire alarm duration
OFF: Alarms not triggered or only events have been triggered

Recording – Yellow LED
Flashing: HDD recording
OFF: HDD not recording

Error - Orange LED
ON: HDD/INTERNAL SD not formatted; HDD/INT SD not installed; HDD/INTERNAL SD been damaged
OFF: MDR working normally

Network - Green LED
(MDRs with mobile network and/or Wi-Fi functions)
ON: Mobile network module detected
Flashing: Mobile network module dialled up (has data transmission)
OFF: Mobile network is not detected

3.1.2 MDR-641XX-X-XXX(XX) Rear View

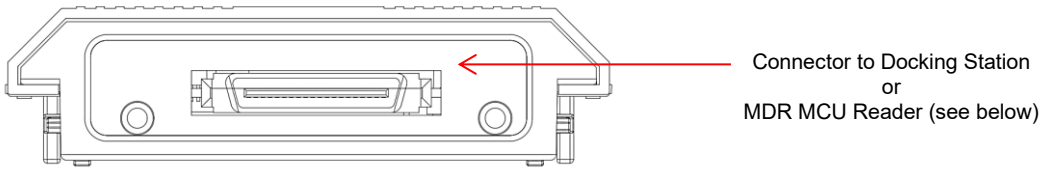


MDR-641XX-X-XXX(XX) Rear View Figure 2

Rear Panel:

Mobile Network Antenna Connector	Analogue Camera 1 Connector
Wi-Fi Antenna Connector	IP Camera 1 Connector
GPS Antenna Connector	Input / Output Cable Connector
Power Cable Connector	Audio / Video Output Cable Connector
Hazard Warning Unit	

3.1.3 MDR-641-X-MCU-XXX

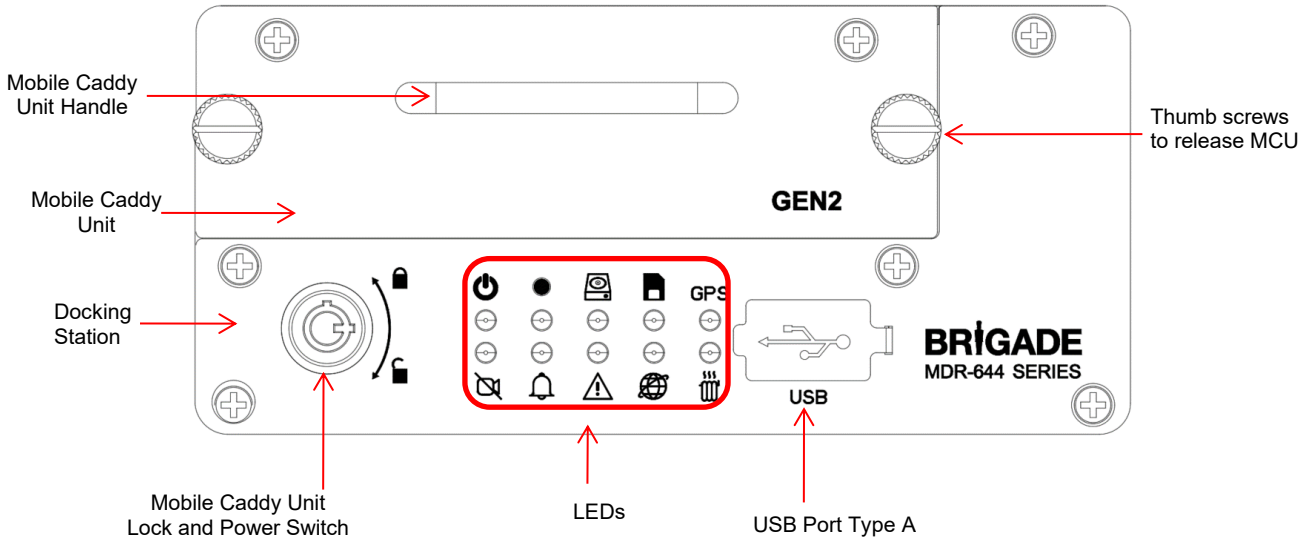


MDR-641-X-MCU-XXX Figure 3

MDR-641-X-MCU-XXX Connection with MCU Reader Figure 4

3.2 MDR-644 Hardware

3.2.1 MDR-644XX-X-XXX(XX) Front View



MDR-644XX-X-XXX(XX) Front View Figure 5

Heater - Yellow LED
ON: HDD Heater is on
OFF: HDD Heater is off

HDD - Blue LED
ON: HDD detected
Flashing: HDD is reading or writing
OFF: HDD is not detected

SD - Yellow LED
ON: SD card detected
Flashing: SD card is reading or writing
OFF: SD card is not detected

Network - Green LED
(MDRs with mobile network and/or Wi-Fi functions)
ON: Mobile network detected
Flashing: Centre Server is connected (Data transmission to the Server)
OFF: Mobile network is not detected

Error - Orange LED
ON: HDD/INTERNAL SD not formatted; HDD/INT SD not installed; HDD/INTERNAL SD been damaged
OFF: MDR working normally

Power – Blue LED
ON: Power on or sleep mode
OFF: Power off

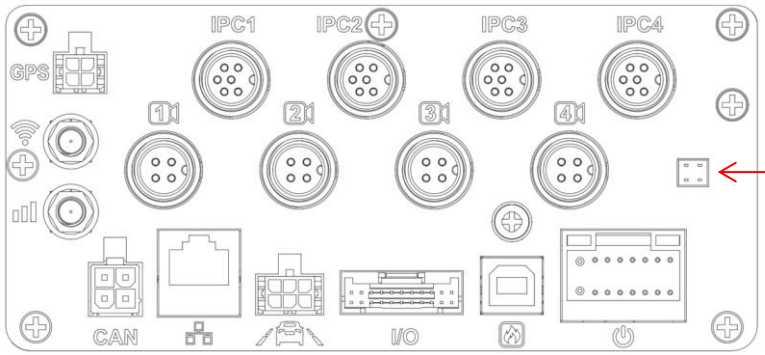
Recording – Yellow LED
Flashing: HDD recording
OFF: HDD not recording

GPS – Green LED
ON: GPS module is detected
Flashing: GPS module transmitting data
OFF: GPS module is not detected

Alarm – Red LED
ON: When an alarm is triggered, lasts for entire alarm duration
OFF: Alarms not triggered or only events have been triggered

Video Loss – Red LED
ON: When a video loss occurs on an enabled channel
OFF: All enabled channels have a video signal

3.2.2 MDR-644XX-X-XXX(XX) Rear View

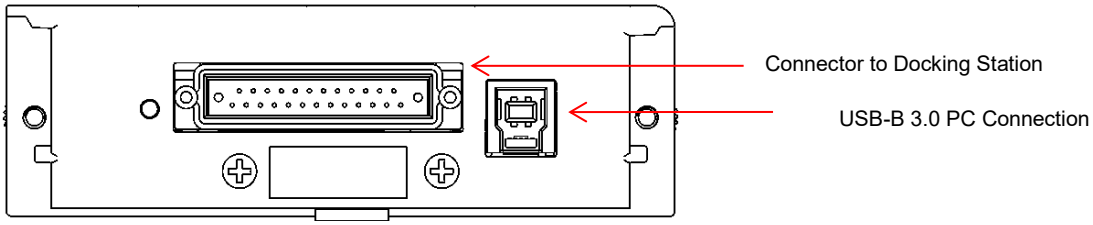


MDR-644XX-X-XXX(XX) Rear View Figure 6

Rear Panel:

	Mobile Network Antenna Connector		Fireproof Box Connector
	Wi-Fi Antenna Connector		Ethernet Connector
GPS	GPS Antenna Connector	I/O	Input / Output Cable Connector
	Power Cable Connector	1	Analogue Camera 1 Connector
	Hazard Warning Unit	CAN	CAN Bus Cable Connector
IPC1	IP Camera 1 Connector		

3.2.3 MDR-644-X-MCU-XXX



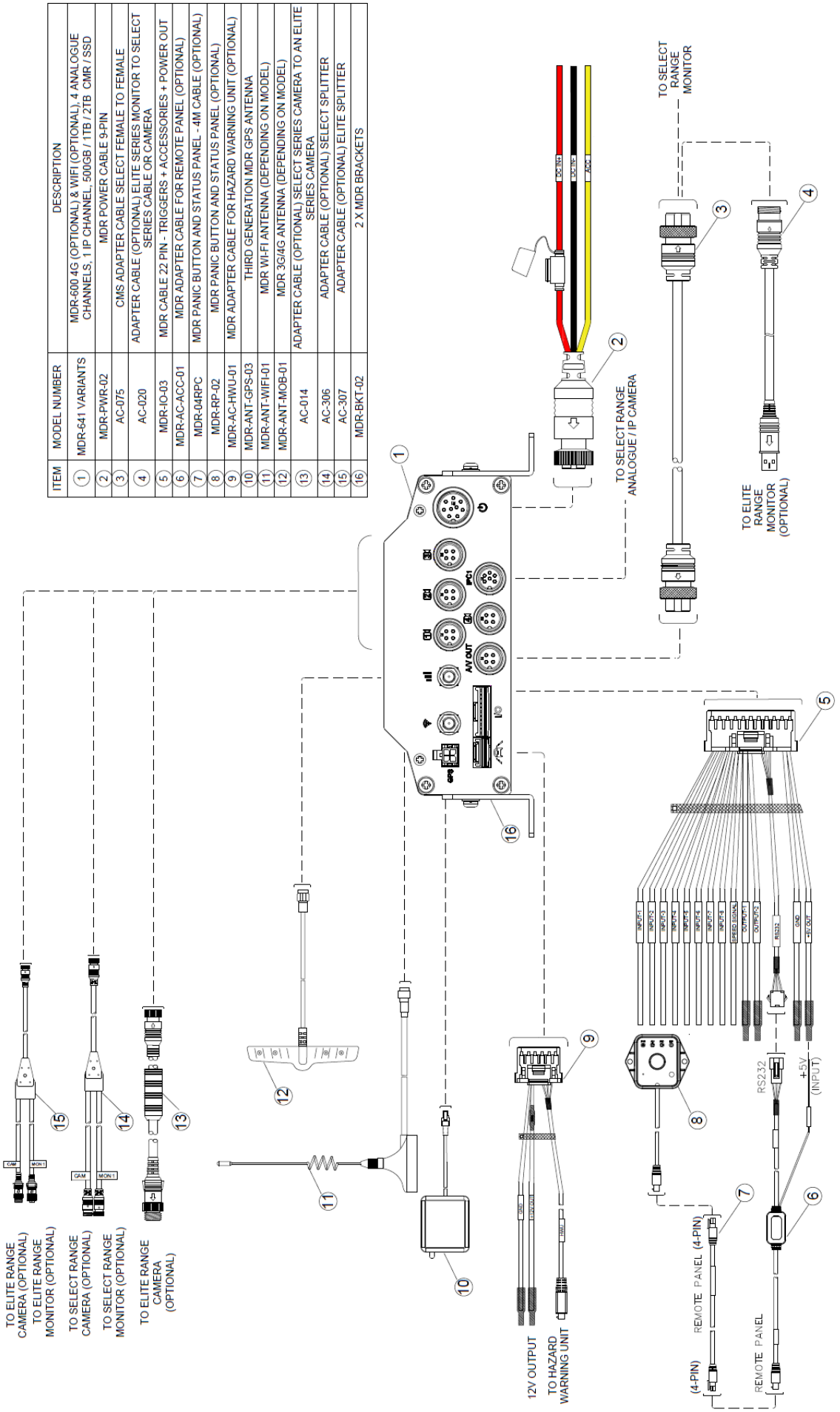
MDR-644-X-MCU-XXX Figure 7

3.3 USB Mouse

MDR-MOUSE-01 Figure 8

3.4 MDR-641XX-X-XXX(XX) Connection Diagram

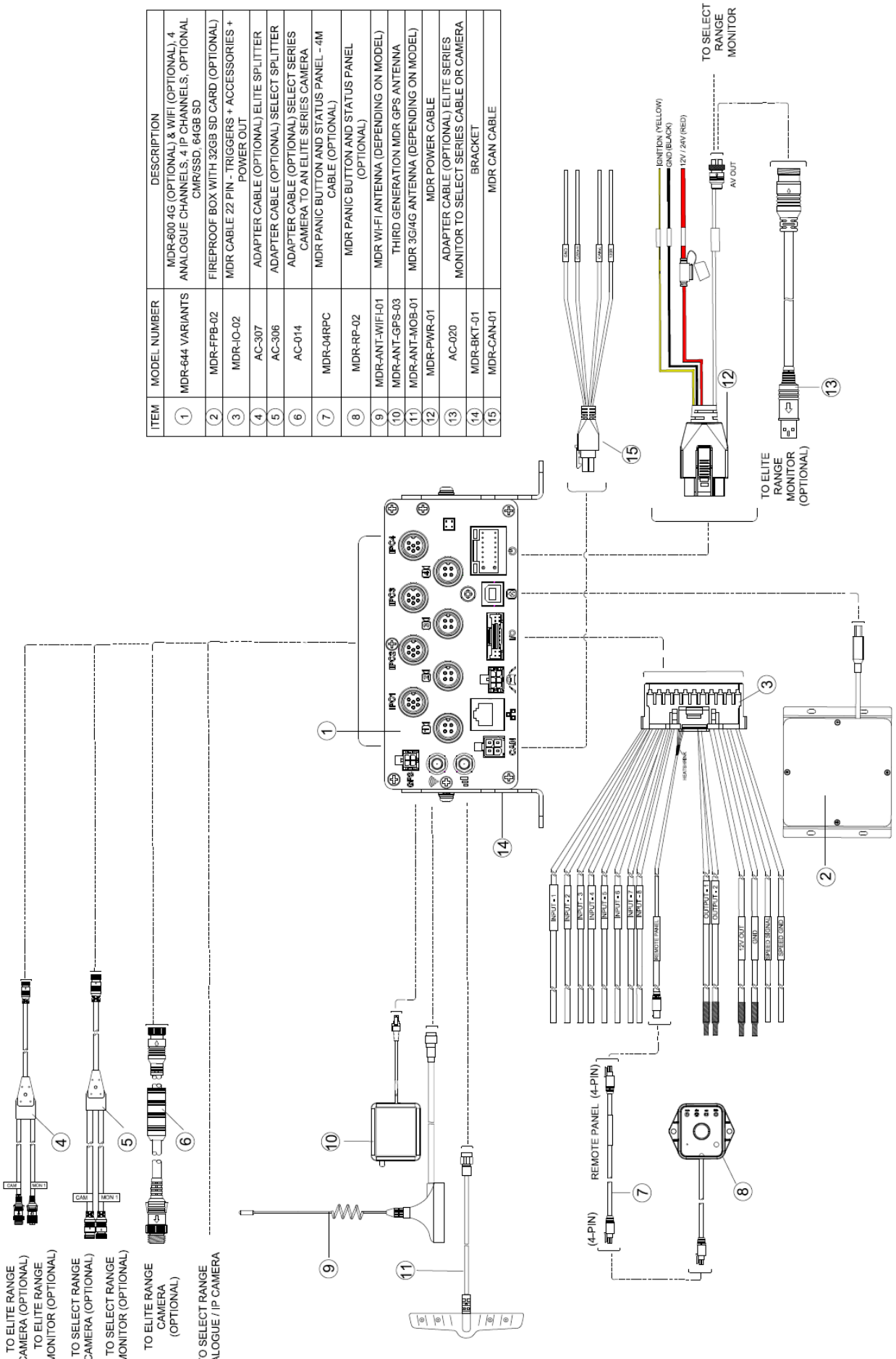
ITEM	MODEL NUMBER	DESCRIPTION
1	MDR-641 VARIANTS	MDR-600 4G (OPTIONAL) & WIFI (OPTIONAL), 4 ANALOGUE CHANNELS, 1 IP CHANNEL, 500GB / 1TB / 2TB CMR / SSD
2	MDR-PWR-02	MDR POWER CABLE 9-PIN
3	AC-075	CMS ADAPTER CABLE SELECT FEMALE TO FEMALE
4	AC-020	ADAPTER CABLE (OPTIONAL) ELITE SERIES MONITOR TO SELECT SERIES CABLE OR CAMERA
5	MDR-IO-03	MDR CABLE 22 PIN - TRIGGERS + ACCESSORIES + POWER OUT
6	MDR-AC-ACC-01	MDR ADAPTER CABLE FOR REMOTE PANEL (OPTIONAL)
7	MDR-04RPC	MDR PANIC BUTTON AND STATUS PANEL - 4M CABLE (OPTIONAL)
8	MDR-RP-02	MDR PANIC BUTTON AND STATUS PANEL (OPTIONAL)
9	MDR-AC-HWU-01	MDR ADAPTER CABLE FOR HAZARD WARNING UNIT (OPTIONAL)
10	MDR-ANT-GPS-03	THIRD GENERATION MDR GPS ANTENNA
11	MDR-ANT-WIFI-01	MDR WI-FI ANTENNA (DEPENDING ON MODEL)
12	MDR-ANT-MOB-01	MDR 3G/4G ANTENNA (DEPENDING ON MODEL)
13	AC-014	ADAPTER CABLE (OPTIONAL) SELECT SERIES CAMERA TO AN ELITE SERIES CAMERA
14	AC-306	ADAPTER CABLE (OPTIONAL) SELECT SPLITTER
15	AC-307	ADAPTER CABLE (OPTIONAL) ELITE SPLITTER
16	MDR-BKT-02	2 X MDR BRACKETS



MDR-641XX-X-XXX(XX) Connection Diagram Figure 9

3.5 MDR-644XX-X-XXX(XX) Connection Diagram

ITEM	MODEL NUMBER	DESCRIPTION
1	MDR-644 VARIANTS	MDR-600 4G (OPTIONAL) & WIFI (OPTIONAL), 4 ANALOGUE CHANNELS, 4 IP CHANNELS, OPTIONAL CMR/SSD, 64GB SD
2	MDR-FPB-02	FIREPROOF BOX WITH 32GB SD CARD (OPTIONAL)
3	MDR-IO-02	MDR CABLE 22 PIN - TRIGGERS + ACCESSORIES + POWER OUT
4	AC-307	ADAPTER CABLE (OPTIONAL) ELITE SPLITTER
5	AC-306	ADAPTER CABLE (OPTIONAL) SELECT SPLITTER
6	AC-014	ADAPTER CABLE (OPTIONAL) SELECT SERIES CAMERA TO AN ELITE SERIES CAMERA
7	MDR-04RPC	MDR PANIC BUTTON AND STATUS PANEL - 4M CABLE (OPTIONAL)
8	MDR-RP-02	MDR PANIC BUTTON AND STATUS PANEL (OPTIONAL)
9	MDR-ANT-WIFI-01	MDR WI-FI ANTENNA (DEPENDING ON MODEL)
10	MDR-ANT-GPS-03	THIRD GENERATION MDR GPS ANTENNA
11	MDR-ANT-MOB-01	MDR 3G/4G ANTENNA (DEPENDING ON MODEL)
12	MDR-PWR-01	MDR POWER CABLE
13	AC-020	ADAPTER CABLE (OPTIONAL) ELITE SERIES MONITOR TO SELECT SERIES CABLE OR CAMERA
14	MDR-BKT-01	BRACKET
15	MDR-CAN-01	MDR CAN CABLE



MDR-644XX-X-XXX(XX) Connection Diagram Figure 10

3.6 Mobile Caddy Unit Removal

***Warning*: Follow the removal steps shown below. Failure to do so will damage the HDD. Ensure that the PWR LED indicates the MDR is OFF prior to removal. Make sure to format HDD/SD card after swapping, different MDR generations use different file systems which are not compatible with each other and will cause recording loss if not formatted in advance.**

3.6.1 MDR-641XX-X-XXX(XX) MCU Removal

Step 1
Unlock the MCU using the key (refer to chapter 2.1.3 Common Accessories).

Step 2
Confirm that the **PWR LED** is **OFF**

Step 3
Pull down the MCU handle, slide the MCU out

Note: If space is limited, the MCU can be removed in an upright direction

MCU Removal for MDR-641XX-X-XXX(XX) Figure 11

3.6.2 MDR-644XX-X-XXX(XX) MCU Removal

Step 1
Unlock the MCU using the key

Step 2
Confirm that the **PWR LED** is **OFF**

Step 3
Completely undo the two thumb screws (anti-clockwise)

Step 4
Gently pull the MCU by holding the front handle

Note: If space is limited, the MCU can be removed in an upright direction

MCU Removal for MDR-644XX-X-XXX(XX) Figure 12

3.7 SD Card Removal

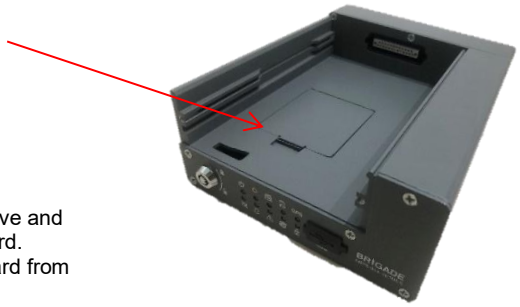
Note: To remove an SD card from an MDR, the MCU needs to be removed first. Make sure the MDR is powered off before removing any storage medium. Failure to do so will damage the HDD/SD card. (See *SD Card removal for MDR-644XX-X-XXX(XX) Figure 13*)

3.7.1 MDR-644XX-X-XXX(XX) SD Card Removal

Step 1
Unlock the MCU using the key and confirm the PWR LED is OFF

Step 2
Slide out MCU. Push the clip away from you while lifting the lid.

Step 3
The SD Card is placed in a SD card slot. Remove and discard the plastic tape covering the SD card. Push and depress the SD card to remove the card from its slot.



SD Card removal for MDR-644XX-X-XXX(XX) Figure 13

3.8 SIM Card Installation

3.8.1 MDR-641XX-X-XXX(XX) SIM Card Installation

Step 1
Remove the MCU unit. This will allow you to access the SIM card slot. Make sure the PWR LED is OFF before removing the MCU. Failure to do so will damage the HDD.

Step 2
Use the clip to flip the cover open. Ensure an earthing strap is worn to prevent any damage to the PCB. Remove the film that is placed over the SIM card slot. Insert the SIM card with the contact pins face down. Push the SIM to lock the SIM securely in place.
.

MDR-641XX-X-XXX(XX) SIM card Installation Figure 14

3.8.2 MDR-644XX-X-XXX(XX) SIM Card Installation

Step 1
Remove the MCU unit. This will allow you to access the SIM card slot. Make sure the PWR LED is OFF before removing the MCU. Failure to do so will damage the HDD.

Step 2
Use the clip to flip the cover open. Ensure an earthing strap is worn to prevent any damage to the PCB. Remove the film that is placed over the SIM card slot. Insert the SIM card with the contact pins face down. Push the SIM to lock the SIM securely in place.

MDR-644XX-X-XXX(XX) SIM card Installation Figure 15

3.9 Antennas Installation

The information found in this sub-chapter may be found in the FCS1362:2016 UK CODE OF PRACTICE for the installation of mobile radio and related ancillary equipment in land-based vehicles. Please use this document for further details. Please see Appendix Chapter 18 General Antenna Guidelines for more information.

3.9.1 GPS antenna Installation (Included)

The GPS module and antenna are embedded together. It needs to have an unimpeded view to the sky. The antenna positioning and orientation is critical to ensure effective operation. Horizontally mounted on a metal plate is optimum.

3.9.2 Wi-Fi antenna (Depending on Model)

Before a magnetic mount antenna is fitted both the underside of the base and the selected body panel surface should always be cleaned to avoid damage to the paint work.

- They must be directly placed on a flat area of steel
- They should not have any other material inserted between the magnetic base and vehicle body other than a protective pad or boot supplied by the antenna base manufacturer. This is to avoid reduction in the magnetic retention strength and any effect on the coupling to the ground plane.

3.9.3 Mobile Network antenna (Depending on Model)

On-glass antennas must be:

- Securely fitted and fixed away from any metal which could deflect the signal
- Located such that driver visibility is not impaired
- Avoid heated screen elements
- Mounted outside of the swept area of the windscreen

4 MDR On-Screen Display (OSD)

This chapter describes the configuration of the MDR.

Brigade's 600 Series MDR displays a start-up screen. See *MDR Initialisation Screen Figure 16*. During this period, the MDR completes a disk check which helps in identifying any file errors or bad sectors. In doing so, the MDR will avoid writing to these sectors to maintain data integrity.

If required, the MDR will attempt to repair any bad sectors prior to entering its recording state. The MDR 600 Series takes approximately 60 seconds to enter a recording state once ignition has been applied.

***Warning*: To guarantee MDR is recording properly, please wait at least 3 minutes after ignition is applied. Brigade will not be responsible for any events not recorded during this start-up period. There are three ways in which a user can tell if the MDR is recording: a visible blue HDD and a green SD card on each channel; MDR REC LED will be on; Remote Panel REC LED will be on (optional accessory).**

MDR Initialisation Screen Figure 16

4.1 Quick Menu

After initial ignition on the MDR, it displays a quad view for Channel 1 – 4 by default. See *Start-up Screen Figure 17*.

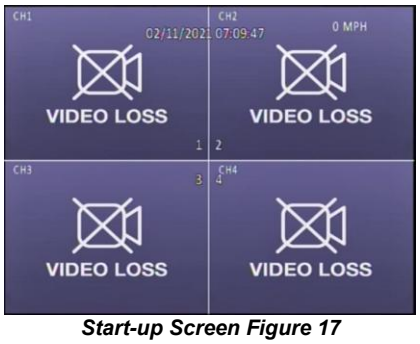
To access the quick menu, use the right button on the mouse  Clicking this button again will make any currently displayed OSD disappear. The right button can also be used as a quick exit button.

By default, the quick menu appears on the bottom of the display area.

Three different view options are available in the quick menu: **Single**, **Quad** and **9-Split**. See *Start-up Screen Figure 17*, *Single View Figure 19* and *9-Split View Figure 20.* Since MDR 600 Series support various channels, by turning page, clicking the view options buttons. E.g., MDR displays 1 – 4 Channel under quad view, click the "Quad" button again, the display switches to 5 – 8 Channel. This applies for the other two view modes.

Playback directly supports playback recordings after clicking. It requires login details and HDD Key (if set) to access.
Note: It starts playback recording from 2 minutes ahead of current time. If the MDR does not have any recording during that period, the direct playback will fail and show "Failed to open playback stream segment!" warning. For accessing full recordings, recommend using Playback feature in *Chapter 6 Record Search.*

Sys Info will be covered in Chapter 8 System Information.



Start-up Screen Figure 17

Quick Menu Figure 18

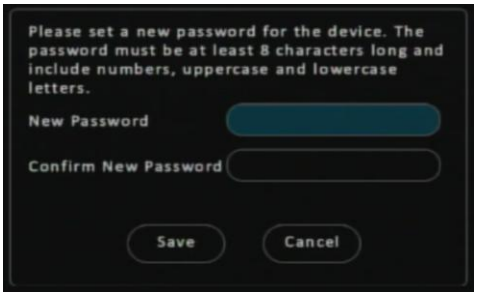
Single View Figure 19

9-Split View Figure 20

4.2 Login

By default, there are two user accounts: **admin** and **user**. If accessing settings when the MDR first boots up, a window will pop up requesting password setup for admin that meets the complexity requirements. After the password for admin has been set, the default password for the **user** account is **user**.

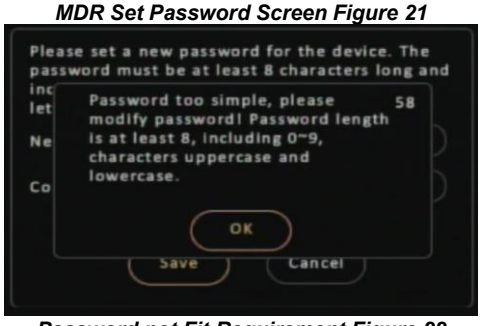
Brigade recommend changing the password after first login which must be documented and controlled by your company. The new password should contain 8 to 16 characters, including uppercase, lowercase letters, numbers, and optionally special characters. Refer to *MDR Set Password Screen Figure 21*.



MDR Set Password Screen Figure 21

After saving the new password, users need to input the correct password on the login window again, to successfully access MDR configuration menu.

Monitors should scale the MDR video output automatically, but some monitors do not do this. If your screen is being partially cut-off, the MDR output margins can be manually adjusted by navigating to **Setup -> Surveillance -> Live View -> Preview -> Margins Setup**. Ensure all white borders are visible. See *5.2.1.1 Preview* for further details.



Password not Fit Requirement Figure 22

Note: When accessing the menu, recording continues without any interruptions.

Once the login is successful, the OSD menu is displayed. See *Menu Structure Figure 24.* The menu is navigated using mouse movement and the left button.

Prior to using the MDR please set the MDR to default settings and clear all history information.

Default settings are achieved by: **Setup → Maintenance→ Reset → Factory Settings → Restore.**

Clear history information by: **System Info → History→ Clean.**

A complete OSD map is found in Chapter *12 On-screen Display Map*.

MDR Language Options Figure 23

Language is supported in current MDR firmware versions.

9 language options in total, which are English, German, Italian, Portuguese, Spanish, French, Polish, Dutch, Russian.

Once you have logged in, the menu structure will be displayed as shown in *Menu Structure Figure 24*.

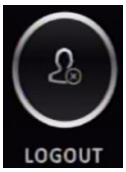
Menu Structure Figure 24

This menu consists of: Recordings Search, System Information, Log Search, Setup and Logout.

There are help buttons  found throughout the MDR OSD menu. These buttons contain additional information to help explain features, settings and functions.

4.3 Logout

Logout is used to log off a user account that has accessed the MDR menu. Ensure to log off once configuration is completed. *See Logout Figure 25*



Logout Figure 25

5 Setup

This chapter describes the setup of the MDR. Settings related to basic setup, surveillance, events, alarms and maintenance. All settings are contained in the MDR Docking Station (DS). This means that Mobile Caddy Unit (MCU) swapping is easily supported if vehicle registrations are completed.

5.1 Basic Setup

Use **SAVE** which is located at the bottom of each page after making any changes.

Warning: Leaving a page prior to saving will cause changes to settings to be lost.

5.1.1 Register Information

5.1.1.1 Vehicle Information

Vehicle Registration is an important field which should always be populated. The vehicle registration is stored on the docking station and is then copied onto the current MCU recordings. This helps in identifying which vehicle the MCU was in at the time of recording. This is vital information if a fleet of vehicles swap MCUs.

Vehicle Number is typically used in fleet/bus applications where a vehicle has an associated fleet number. This can be captured in this field to assist in identifying the vehicle.

Vehicle Info Figure 26

5.1.1.2 Driver Information

Driver Number is typically used in fleet/bus applications where a driver has an associated number. This can be captured in this field to assist in identifying the driver in the event of an incident.

Driver Name may be populated which would make it easier in linking a driver's name with their number.

Driver Info Figure 27

5.1.1.3 Company Information

Company Name can be used in various type of fleets. The name filled in this blank will be synchronized to display on MDR-Dashboard software vehicle information section, which is under the vehicle fleet window.

Company Branch will make the vehicle information more detailed. Also, this will be displayed in the MDR-Dashboard software as well.

Company Info Figure 28

5.1.2 Time Setup

5.1.2.1 General

Date Format can be set to either DAY/MONTH/YEAR, YEAR-MONTH-DAY or MONTH/DAY/YEAR. By default, it is set to DAY/MONTH/YEAR.

Time Format can be either 24 Hours or 12 Hours. By default, it is set to 24 Hours.

Time Zone includes worldwide time zone options. By default, this is set to (GMT) DUBLIN, EDINBURGH, LONDON.

Default is found on most settings pages. This allows you to easily restore the factory settings for those settings

Time Setup Figure 29

5.1.2.2 Time Sync

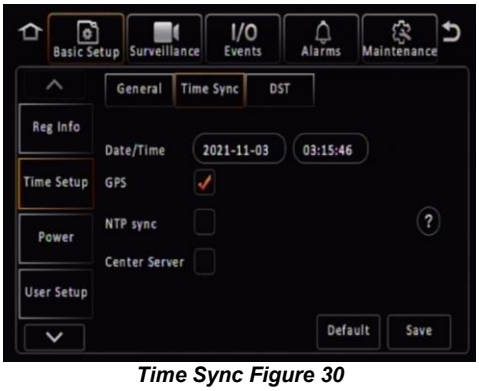
Date/Time can be entered manually here.

GPS should be ticked, and the GPS antenna should be mounted in a vehicle location where signal can be achieved easily. This is the simplest and more reliable option.

NTP sync refers to network time protocol that is used to synchronize time with NTP Server PC time. This should only be used for mobile network or Wi-Fi MDR units.

Center Server allows to synchronize the time with current connected MDR servers.

Note: When GPS, NTP sync and Center Server are enabled simultaneously, GPS takes highest priority. The priority between them is GPS>NTP sync>Center Server.



Time Sync Figure 30

5.1.2.3 Daylight Saving Time (DST)

Allows users to enter the date and time in which the Daylight-Saving Time will be activated. In the U.K, it starts on the last Sunday of March at 1:00 AM and ends on the last Sunday of October at 2:00 AM. Enter the correct time and date of the country in which the vehicle will be utilised. Whenever **DST** is not in use, turn this option to off.

DST Enable is enabled by default. This setting determines whether daylight saving time is active.

Start represents the month, date, day and time at which DST begins. By default, this is set to UK DST. If the time zone has been changed to another country, other than the UK, then the DST settings will need to be amended to reflect the selected country.

End represents the month, date, day and time at which DST finishes.

Daylight Saving Time Figure 31

5.1.3 Power

5.1.3.1 On/Off

On/Off Mode has three different modes: IGNITION, TIMER and IGNITION OR TIMER.

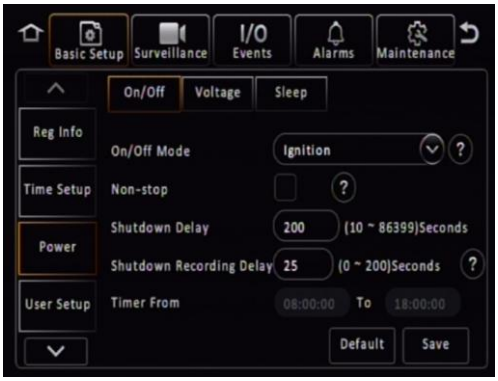
This option determines the conditions for which the MDR will power up. By default, it is set to **IGNITION**, which means that the MDR only turns on when an ignition signal is applied (yellow wire).

Note: Timer mode must not be used for extended periods of time – this will damage your vehicle's battery.

Non-stop allows the MDR to record infinitely. Enabling this will disable Shutdown Delay.

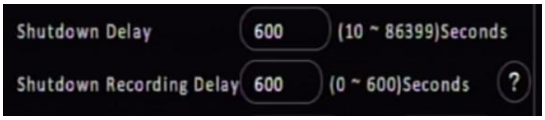
***Warning*: Using the MDR for prolonged periods of time without ignition (vehicle running) can drain the vehicle's battery. Recommend that the Low Voltage Protection feature is enabled. See *5.1.3.2 Voltage* for details.**

Shutdown Delay refers to the period the MDR will remain on and recording once the ignition has been turned off. The range is 0 to 86399 seconds (24 hours). By default, this is 600 seconds (10 minutes).



On/Off Figure 32

Note: MDRs are required to be continuously on for approximately 6 minutes, this period is called “Protection Time”. If try to turn off the MDR before it is running continuously for 6 minutes, MDR will judge between current running time and Shutdown Delay setting.
1) If Shutdown Delay (60s) < remaining Protection Time (3min out of 6min), The MDR will count down the remaining Protection Time (3min) before shutdown.
2) If Shutdown Delay (600s) > remaining Protection Time (3 min out of 6min), the MDR will count down the Shutdown Delay value before shutdown.
In all cases, the MDR will choose the longer value to count down, to protect itself from damage by abrupt shutdown.



Shutdown Recording Delay Value Change Figure 33

Shutdown Recording Delay allows MDR to stop recording during shutdown delay period. Considering after ignition off, the recording during this shutdown period may not be useful in some aspect, user can set MDR to stop recording and save storage space. The Shutdown Recording Delay range is between 0 to the value user set for Shutdown Delay. This maximum value changes when the Shutdown Delay value changes. See *Shutdown Recording Delay Value Change Figure 33*.

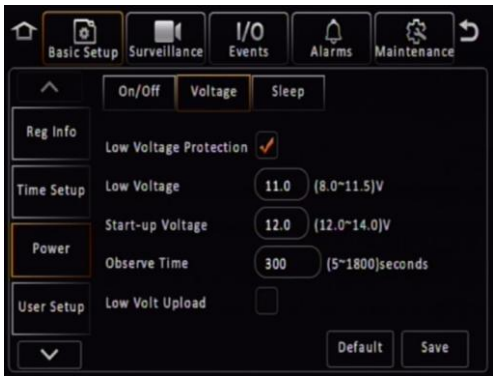
Timer From becomes active once an On/Off Mode that includes timer is selected.

5.1.3.2 Voltage

Low Voltage Protection Enable is off by default. This feature is important to use to protect your vehicle’s battery from damage. Ensure this feature is activated when using the non-stop shutdown delay feature.

Low Voltage is the voltage level which is a dangerously low value. For a 24V vehicle, the limits are from 21V to 23.5V. For a 12V vehicle, the limits are from 8V to 11.5V. If power supply voltage is lower than the set value, MDR will start the low voltage protection process.

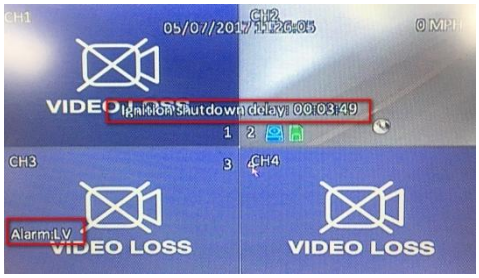
Start-up Voltage refers to the minimum voltage the MDR must receive before powering on. For a 24V vehicle, the limits are 24V to 26V. For a 12V vehicle, the limits are 12V to 14V.
Note: If MDR shutdown because of low voltage, the next time supply voltage must higher than the Start-up Voltage value, or MDR will not boot up.



Voltage Figure 34

Observe Time is the amount of time the low voltage value must be observed. This is to ignore any sudden dips in voltage that auto-recover. The MDR will be forced to shut down if voltage does not recover during Observe Time.

Low Volt Upload can only be used if a wireless or mobile network MDR is used. MDR Server software is a requirement for this feature. Once the MDR detects a low voltage level, it will send this data back to the MDR Server where it gets stored. This can then be reviewed later. Depending on MDR model.



Low Voltage Shutdown Delay Figure 35

Proposed Low Voltage Protection Settings for lead-acid batteries (Note: Please check if these are suitable for your vehicle):

12V Vehicles	24V Vehicles
Low Voltage:11.7V	Low Voltage:23.7V
Voltage of Start:12.5V	Voltage of Start:24.5V
Observe Time:15 minutes	Observe Time: 15 minutes
Shut Down Delay:5 minutes	Shut Down Delay:5 minutes

5.1.3.3 Sleep

Sleep is a temporary standby status which enables MDR to automatically wake up from time to time to complete MDR-Dashboard platform issued Auto-download tasks. While the device is in Sleep mode, GPS, 4G, RTC are still working.

By default, this is off. This feature aims for saving vehicle battery consumption while MDR is lined up waiting for its turn to download footage to MDR server.

Sleep Duration defines how many hours the MDR will stay in sleep mode.

Periodic Wake-up means after MDR enter Sleep mode, it can periodically wake up after several minutes to resume online download tasks.

Sleep mode Figure 36

Note:

1. **3-time check-up**: If MDR cannot detect auto-download (ADS) tasks (likely no task assigned), it will wake up after ignition off only 3 times to

check with the platform then shut down completely, ignoring the Sleep Duration settings **to protect the** vehicle battery. If MDR has ADS tasks, after task completed, it still has the 3-time check-up before shutdown.

2. If Sleep Duration time ends before ADS task started, MDR will end the sleep mode and shut down completely.

3. If Sleep Duration (1 hour) set value less than Periodic Wake-up (65 min), MDR will wake up at 65 minutes, and act differently when:

a. There's an ADS task but it's not its turn to start download: MDR will shut down because the sleep duration is over.

b. There's an ADS task and Wi-Fi available for download: MDR will complete the task then shut down, no 3-time check-up needed because the sleep duration is over.

c. There's no ADS task: MDR will shut down because the sleep duration is over.

5.1.4 User Setup

Menu Idle Time refers to the period for which the menu will remain active and logged in. Once this period finishes, the MDR will automatically log off the user.

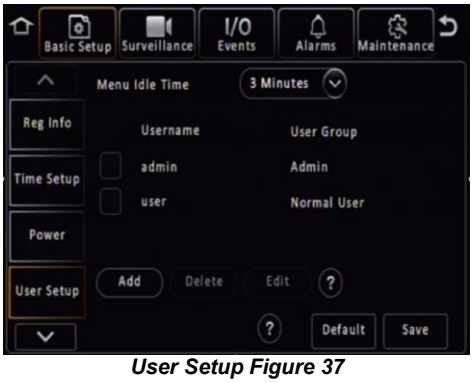
Username is the name you use to log onto the MDR. By default, there are two usernames: **admin** and **user**.

User Group represents the level of access to the MDR OSD. There are only two types: Admin and Normal User. Admin has access to all settings and features. Normal User has restricted access: sys info, playback and export logs and videos.

Add is used to create additional user accounts. A maximum of three user accounts can exist.

Edit is used to change existing user account details.

Note: If the **Default** button at the bottom is pressed and saved, the user credentials will be cleared. After exiting the menu, user will need to set a new password for **admin**.



User Setup Figure 37

5.1.5 HDD Key

HDD Key used for encrypting stored data while doing MDR playback or using MDR-Dashboard to read the MCU via USB cable. By default, it is off.

After enabling this feature:
1) If attempting to playback recordings on MDR, it will ask to input correct password before proceeding.

2) The MDR-Dashboard client will have a verification window pop up before loading video data. *See MDR-Dashboard Input HDD Password Figure 40.* The HDD key cannot be wiped out by formatting the MCU, and it also not logged in MDR config file for security purpose.

Storage Name choose between HDD and SD(Internal) if it is available. HDD represents main storage medium such as hard disk drive and solid-state drive. SD(Internal) represents SD card installed inside MDR Docking Station.

Storage Protected Enable by default set to off.

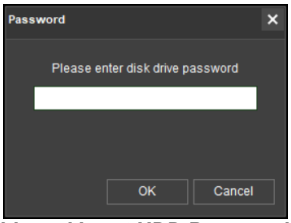
HDD Password is used to setup a new password or reset current password. Password combination must contain numbers, capital and lower-case characters.

Old Password is used for confirming previous password before resetting to a new password or disabling the protection. If user did not input the old password or typed it incorrectly, the reset process or disable setup will be unable to proceed.

HDD Key feature auto adapted to every installed MCU/SD card. Swapping MCU will not affect its current setting. If the MCU previously enabled the HDD key feature, then in this section, the Storage Protected Enable will be ticked automatically, but password section has no value for data security purpose. If the MCU does not enable the HDD key feature previously, after installing on the Docking Station, the HDD key section will display feature disabled.

HDD Key Figure 38

MDR Playback Requires HDD Key Figure 39



MDR-Dashboard Input HDD Password Figure 40

Note: The HDD Key cannot be removed by formatting the HDD or SD card. It is not saved in Config File, therefore users must setup the Key for individual MDRs.

If the HDD Key has been forgotten, please contact Brigade, a 1-day serial number-bounded key can be provided to the user to reset the HDD key.

5.1.6 Network

5.1.6.1 Ethernet

There are two modes available for Ethernet adaptor addressing, DHCP and Static.

DHCP Mode refers to the Ethernet adaptor of the MDR obtaining an IP address automatically from the network.

Static IP is used to specify the exact network details you would like the MDR Ethernet adaptor to use.

IP Address refers to the internet protocol address of the Ethernet adaptor. This address is used to access the MDR Ethernet menu via LAN cable. Recommended to ask your internal IT for information and assistance.

Subnet Mask is used to identify network address of an IP address. By default, this is 255.255.255.000.

Gateway helps route the network traffic. By default, this is 192.168.001.254.

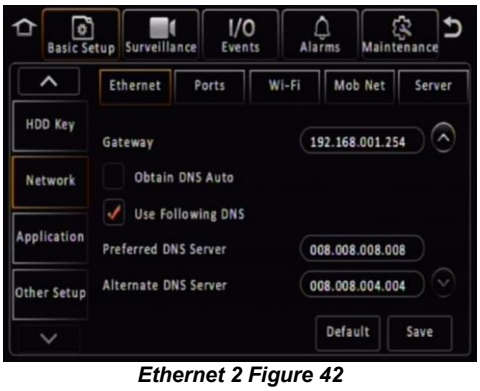
Obtain DNS Automatically refers to the domain name system. A DNS server takes the website addresses that you type in and integrates them into the actual IP address of the site. While MDR attempts to get an IP address for itself from the DHCP server, it will simultaneously attempts to resolve address.

Use Following DNS the MDR will use these DNS addresses regardless of what the DHCP server is using.

Preferred DNS Server by default, this is 008.008.008.008.

Alternate DNS Server by default, this is 008.008.004.004.

Ethernet 1 Figure 41



Ethernet 2 Figure 42

5.1.6.2 Ports

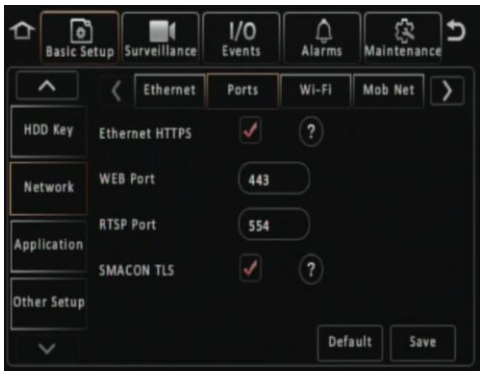
Ethernet HTTPS ensures that communication between the MDR and its Ethernet page is encrypted. By default, this is enabled for communication security.

Web Port is used for when a PC is connecting to the MDR Ethernet page. If this is incorrect, the web page will not open. When **Ethernet HTTPS** is enabled, the port is 443 by default. When it is disabled, the default port is 80 for non-HTTPS communication.

RTSP Port is used for Real Time Streaming feature which can be configured in MDR Ethernet page. Changing this port will result in the Real Time Streaming feature not working properly. By default, this is 554.

SMACON TLS is used for when Smartcontroller APP is connecting to the MDR via TLS encryption. By default, this is enabled for communication security.

Note: After SMACON TLS has been enabled, please make sure to enable TLS on the SmartController Apps login page before operation; otherwise, the login will fail.



Ports Figure 43

5.1.6.3 Wi-Fi

These settings are dependent on your MDR model. This requires a wireless MDR model or any MDR model with external Wi-Fi dongle connected through Ethernet port.

Wi-Fi 1 Figure 44

Enable is used to turn the Wi-Fi module to 3 different statuses, Off, On and SmartController. Once On or SmartController are slected, the settings found below will become active.

Enable (On) activates the Wi-Fi module and acts as a Wi-Fi client, the MDR will have the ability to connect to any valid Wi-Fi signal for data transmission.

Enable (SmartController) activates the Wi-Fi module and acts as a Wi-Fi hotspot which will provide a Wi-Fi signal for any mobile device to connect, but only use for MDR SmartController App. Mobile device cannot get online access by connecting to MDR hotspot.

Note: under **Enable (On)** mode, when the MDR is booting up, for the first 3 minutes it will stay in **Enable (SmartController)** mode to quickly access the menu and adjust settings. After 3 minutes, it will switch back to **Enable (On)** mode for activating Wi-Fi connectivity and communicate with MDR Server through Wi-Fi data.

SmartController Wi-Fi Setup Figure 45

SSID is the service set identifier.

SSID (On) It is used to identify a wireless LAN and is usually unique to an area. This is where you will enter the name of the wireless network that the MDR will connect to.

SSID (SmartController) is to set the name of the MDR wireless network hotspot which mobile devices can look for when trying to connect.

SmartController Wi-Fi Hotspot Figure 46

Encryption refers to protocols used to protect your network.

Encryption (On) supports WEP, WPA/WPA2-PSK and WPA2_Enterprise. This is case-sensitive.

Encryption (SmartController) supports None, WEP and WPA. None means no password needed when trying to connect to this hotspot. WEP and WPA needs a minimum 8 character password, or the hotspot will not show up on the Wi-Fi list properly.

User Name is only valid when **Encryption** choosing **WPA2_Enterprise** (the username and password will be provided with the Wi-Fi router). Otherwise, this field is greyed-out and is un-editable.

Wi-Fi 2 Figure 47

Password is the wireless network password; this should be entered carefully as it is case-sensitive.

Static IP is used to turn the Wi-Fi module off or on. Once enabled, the settings found below will become active.

IP Address refers to the internet protocol address of the Wireless module. This address is used to join the wireless network.

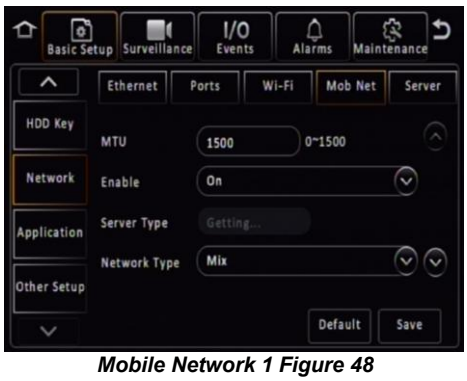
Subnet Mask is used to identify the network address of an IP address. By default, this is 255.255.255.000.

Gateway helps route the network traffic.

*__Share Network__ - MDR Wi-Fi Network can share with other devices after connecting an Ethernet cable. The second device local IP address should set to 10.100.100.xxx (from 2 – 254 and avoid IP camera address if available). Subnet Mask: 255.255.255.0. Gateway: 10.100.100.1. DNS: 8.8.8.8 or other public DNS servers.

5.1.6.4 Mobile Network

These settings are dependent on your MDR model. This requires a mobile network MDR model or any MDR model with external 4G dongle connected through the Ethernet port.



Mobile Network 1 Figure 48

MTU is used to adjust the MTU (Maximum Transmission Unit).value for optimising your network transmission. By default, set to 1500.

Enable is used to turn the mobile network module off or on. Once enabled, the settings found below will become active.

Server Type is an auto-populated field, indicates the mobile network connection type.

Network Type refers to the type of mobile network connection that is used by the MDR to connect to the internet. Default is set to **4G**. The option **Mix** works for both 3G and 4G networks.

APN refers to Access Point Name. This information is dependent on your mobile carrier network.

Username obtain from your SIM card provider.

Password obtain from your SIM card provider.

Access Number refers to the dial up phone number needed to connect to the network. By default, this is set to *99#

Certification refers to the authentication mode, can be set to either CHAP (Challenge Handshake Authentication Protocol) or PAP (Password Authentication Protocol). CHAP should be chosen as this is a more secure authentication protocol. This is chosen by the network operator.

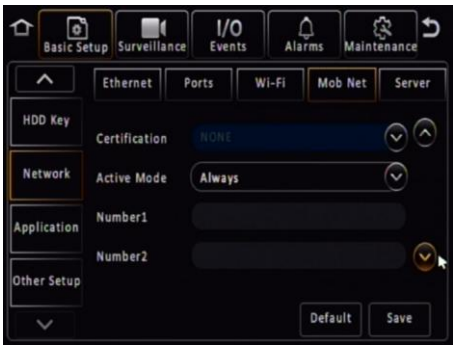
Active Mode provides different connection types of Mob Net. By default, the connection mode is Always, which means the MDR will immediately connect to mobile networks as long as this feature is enabled. Another option is Phone/SMS which can let the MDR stay under no connection status until certain phone calls or messages comes in.

Number1/2/3 link with above Active mode. If Phone/SMS is selected in active mode, users can fill in 3 different mobile numbers here. When these number calls or send message to the MDR sim card, the Mob Net connection will be built and MDR can start using mobile data for online features.

Note: There's a sub-feature. If a user calls in, the MDR will display caller number and options to pick up or hang up the call. If picking up, the MDR will be able to audio-communicate with the caller.

***Share Network** - MDR Mobile Network can share with other devices after connecting with an Ethernet cable. The second device local IP address should be set to 10.100.100.xxx (from 2 – 254 and avoid IP camera address if use any). Subnet Mask: 255.255.255.0. Gateway: 10.100.100.1. DNS: 8.8.8.8 or other public DNS servers.

Mobile Network 2 Figure 49



Mobile Network 3 Figure 50

5.1.6.5 Server

Center Server refers to the MDR Server PC. A maximum of 6 center servers can be saved.

Add adds another center server, a new blank page is displayed with a new number.

Delete removes the currently displayed center server.

ON enables the current center server.

TLS Enable encrypts communication between the MDR and the Server. This is recommended to enable if the server deployed with HTTPS.

Verify Certificate ensures the authenticity of the server's certificate during every TLS connection attempt once the server's root certificate and revocation list (CRL optional) are imported into the MDR. The connection is allowed only after successful verification. This feature is disabled by default.

Note: If enable this feature, importing the server's root certificate is mandatory prior to use; otherwise, server connections will fail. For importing toot certificate and CRLs, please refer to Chapter 5.5.6 Certificate

Protocol Type refers to the protocol used by the MDR unit to send its data (video and metadata) to the MDR Server. By default, this is set to MDR6. Maximum supports connect to 4x MDR6 server simultaneously.

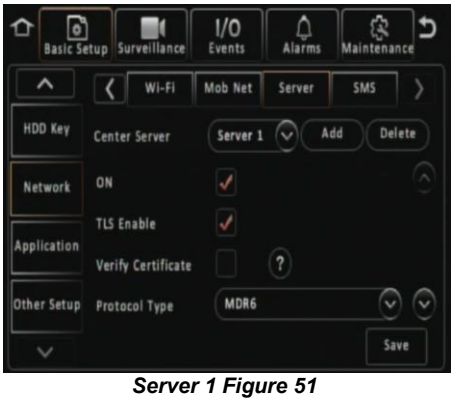
Network Mode refers to the network communication module used to communicate with the MDR Server. The options are Ethernet, Mobile Network and Wi-Fi. This is discussed in further detail in *MDR 600 Series Network Connectivity SW&Infrastructure Manual*. This can be found on the Brigade website.

Register Server IP Public IP address of the firewall which forwards any traffic to the server PC or IP address of the server PC hosting the MDR Wi-Fi Server. (Domain name also supported)

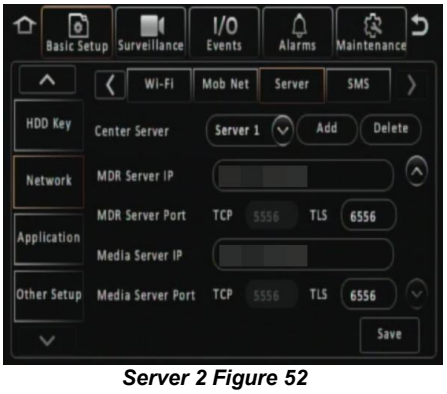
Register Server Port is used for device access to server. When TLS function is enabled, it uses TLS port, by default, it is 6556. When TLS function is disabled, it uses TCP port, by default, it is 5556.

Media Server IP should be the same as MDR Server IP.

Media Server Port should be the same as MDR Server Port. By default, it is 6556 or 5556, depends on whether enabled TLS.



Server 1 Figure 51



Server 2 Figure 52

5.1.7 Application

5.1.7.1 FTP Server

FTP Enable is for setting up an FTP server for storing snapshots. The FTP is used for building a channel between software and MDR hardware, which allows users to download footage or snapshot through MDR-Dashboard software. Recommend enabling permanently.

Server is filled in by default, recommend not to change.

Port is set by default, recommend not to change.

Username is for the FTP server login.

Password is for the FTP server login, void by default.

FTP Server Figure 53

5.1.8 Other Setup

5.1.8.1 Algorithm

This screen collects various measurements for vehicle body and installation height, which are being used to setup IP-FFC-AI-01 – Forward Facing Camera (hereinafter referred to as FFC) to achieve AI functionalities.

Before proceeding with these settings, please make sure:

1) IP-FFC-AI-01 has been properly installed on the vehicle and connection to MDR confirmed. For details refer to *Brigade AI Cameras and Accessories (Various) Installation & Operation Guide*.

2) 2x IO have been properly enabled and assigned to “Left Steering” and “Right Steering”. For details refer to *Chapter 5.4.1.3 IO Alarm*.

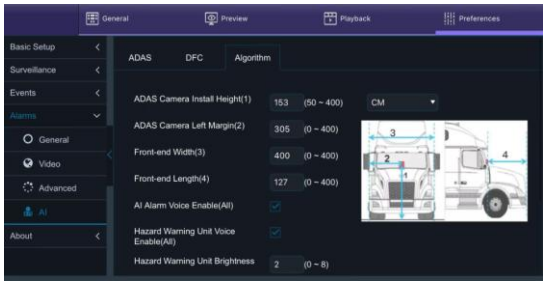
ADAS Camera Install Height: this is the height from the middle of the FFC lens to the ground.

ADAS Camera Left margin: this is the horizontal distance between the FFC and the left end of the vehicle body.

Front-end Width: this is the vehicle body width (distance from outside of one wheel to outside of the opposite wheel).

Front-end Length: this is the distance between the FFC and the front end of the vehicle, which is also the distance between the FFC lens and the license plate of the vehicle.

If still not clear about what those measurements mean, users can use the SmartController App to access the **Algorithm** menu to check out the illustration. Due to Linux system limitation, the illustration is not displayed on MDR OSD.



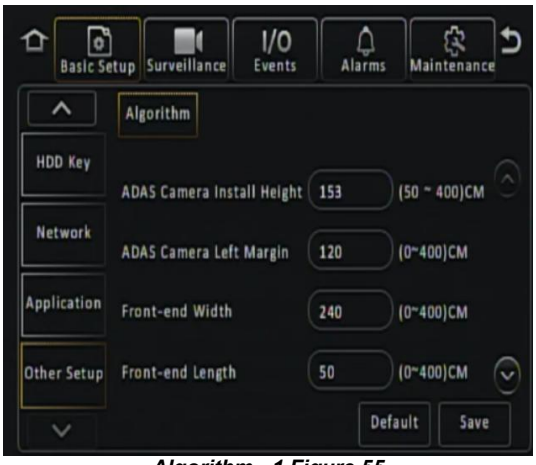
Algorithm menu on SmartController App Figure 54

Unit Type can be in **CM** or **Inch**.

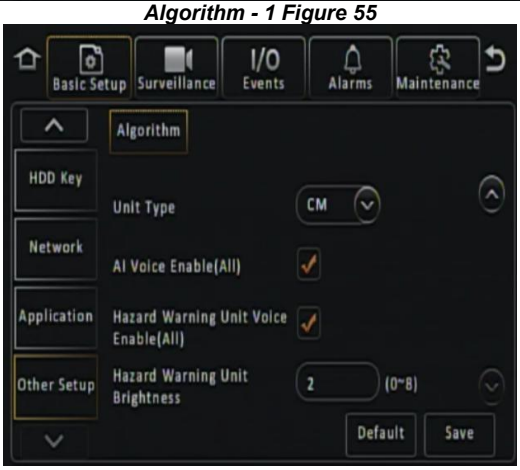
AI Voice Enable (All) is the master switch for all AI alarm audio alerts. User can also select which AI alarms to give audio alerts and disable the ones that are not required, see chapter 5.4.4 AI for details on how.

Hazard Warning Unit Voice Enable (All) used to control whether or not the Hazard Warning Unit gives beeping alerts when AI alarms happen.

Hazard Warning Unit Brightness adjustable from level 0 – 8, higher the number, brighter the display screen. 0 is completely dark, no visual display available. By default, it is set to 2 which has a good performance balanced for daytime / nighttime driving.



Algorithm - 1 Figure 55



Algorithm - 2 Figure 56

5.2 Surveillance

5.2.1 Live View

5.2.1.1 Preview

Note: The MIRROR and FLIP VERTICAL feature affects both the live and recorded views.

Live Audio is used to send real-time audio from a microphone enabled camera to a speaker enabled monitor. By default, this is disabled.

Image Setup is used to control BRIGHTNESS, CONTRAST, COLOUR and SATURATION. By default, this is set to mid-point (31). Each channel can be setup individually. All Settings (except mirror and flip vertical) can easily be duplicated across all channels by using the COPY TO button. A MIRROR and FLIP VERTICAL button may also be configured per channel.

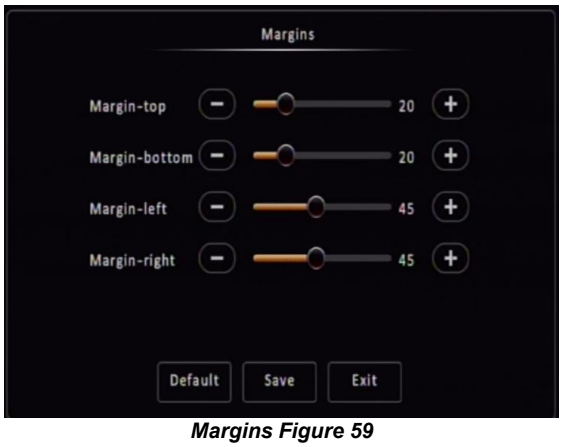
Preview Figure 57

Image Setup Figure 58

Margins is a key feature to adjust the MDR displayed output. By default, MARGIN-TOP is 20, MARGIN-BOTTOM is 20, MARGIN-LEFT is 45 and MARGIN-RIGHT is 45.

Start-up Screen refers to the configuration the MDR will display once it has fully booted up. The options are SINGLE, QUAD and 9-SPLIT. By default, MDR will have quad view.

Channel controls which channels that you want to view upon MDR boot up. If the Start-up Screen is set to Quad, user can choose any 4 channels to display on the first page. This feature allows the user to view required channels without operating the MDR.



Margins Figure 59

5.2.1.2 Autoscan

Autoscan Enable must be ticked to enable all the options.

Screen is used to identify the different **Autoscan** views.

Delete removes **Autoscan** views.

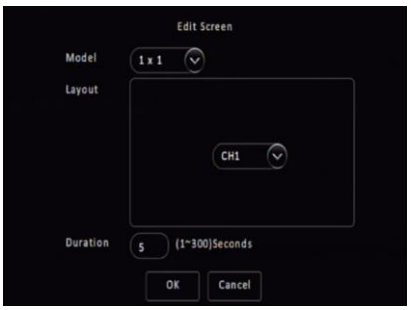
Edit Screen is where **Autoscan** views are setup.

Mode refers to layout options, such as single, quad, 9-split (8CH only).

Layout is where you choose your channel arrangement.

Duration refers to time displaying the **Autoscan**. 1-300 seconds.

Autoscan Figure 60



Edit Screen Figure 61

5.2.1.3 Live OSD

This refers to information that is displayed on the live monitor view at all times.

The options are: Date/Time, Vehicle Reg, Alarm, Vehicle Num, Recording State, Speed, GPS, Channel name and G-Force.

Users can change the position of each live OSD option by using the **Setup** button. The recording states' position is fixed and cannot be changed. This will be displayed in the setup screen.

Live OSD Figure 62

Live OSD Position Figure 63

5.2.1.4 RTSP (Real Time Streaming Protocol)

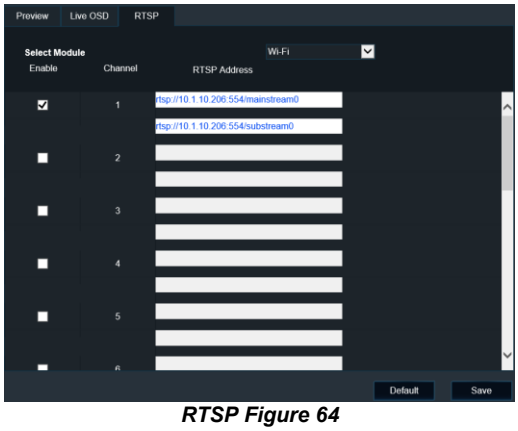
This feature only available in Ethernet page. It provides RTSP streaming link for third party media player user.

Select Module to choose which communication method MDR will be used for streaming transmission. 3 options available: Ethernet, Wi-Fi and Mob Net.

Enable to allow which channel can pull video stream to third party media player. Mainstream and Sub-stream available. (Mainstream and Sub-stream parameters setting see 5.2.2 Record) Remember to click on the **Save** button to save current RTSP setup, or these settings will be lost after exit the web page.

Channel automatically adapt to MDR models. 6 channels available for MDR 504, 16 for MDR 508.

RTSP Address used for input to third party player to obtain live streaming.



RTSP Figure 64

5.2.2 Record

5.2.2.1 General

Video Format is used to select the video output format. The options are AHD -PAL/NTSC. By default, **PAL** is chosen. This will be the same for all camera inputs.

Note: Brigade's monitors have automatic detection of these standards.

The MDR also supports single ended TVI cameras, which can be at the same time as CVBS / AHD cameras. However, due to the TVI camera features, test individual TVI camera with MDR before use.

HDD/SD Overwrite refers to when an HDD and SD cards will overwrite its stored data. The options are BY CAPACITY, BY DAYS and NEVER. By default, BY CAPACITY has been selected, which means once the HDD has 4GB of space remaining (1GB for SD card), older recordings are erased and replaced by newer recordings, excluding locked files. The NEVER option is when overwrite is deactivated. The MDR will stop recording when the HDD reaches 2GB of free space. The user must either replace the storage or manually delete recordings.

Note: If recording time conflicts, for example, crossing a time-zone which results in a 1-hour time change. Records during the overlapping time period won't be overwritten or erased, still saved in the storage medium, but playback by MDR is not supported. Recommend exporting the conflicting video out through USB port on front panel then use MDR-Player 6.0 to playback the certain footage as needed. *Refer to Conflict Footages Show in Computer Figure 66*

Locked File Retention This represents the length of time (in days) for which alarms cannot be overwritten by the MDR. When the retention expires, the locked files will automatically be unlocked and deleted.

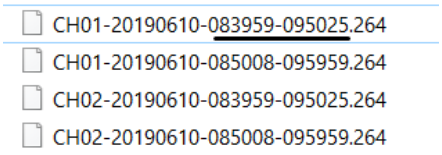
Alarm Pre-recording This value specifies the length of time prior to an alarm recording. This will be added before the actual alarm. For example, if ALARM PRE-REC is set to 10 minutes and an alarm of 5 minutes is triggered at 4:00pm and ALARM POST REC is 180 seconds, the alarm recording will begin at 3:50pm and will end after 4:08pm. See Chapter *5.4 Alarms* for more information.

Enable Live View controls whether to display live view for each channel on the screen. By default, all channels have been enabled. If channels are disabled, live view will cease by displaying a black image. This setting will not affect recording functionality. Refer to *Disabled Channel 2 Live View Figure 69.*

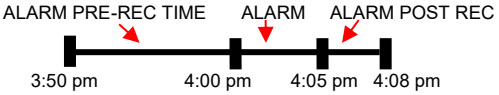
SD Record Mode options are **Sub-stream**, **HDD (Main Stream)**, **Alarms (HDD)** and **None**. By default, sub-stream is chosen. Turn this option to **NONE** when an SD card is not present in the unit. SD card data includes frame information only. Once the record mode has been chosen, tick the channel to be recorded to the SD card.

The sub-stream option enables the user to customise audio function, set resolution, frame rate and quality. Easily copy to all channels with the **Copy To** button.

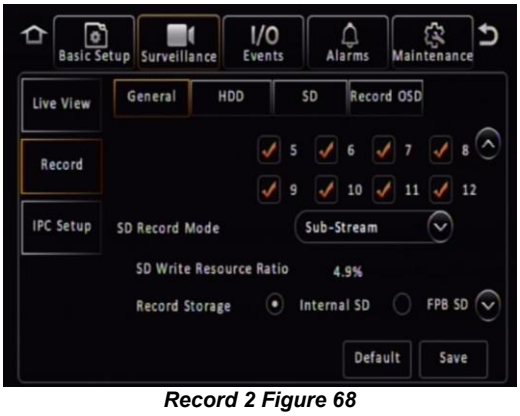
Record Figure 65



Conflict Footages Show in Computer Figure 66



Pre-Rec and Post Rec Explanation Figure 67



Record 2 Figure 68

HDD (Main Stream) mode will mirror record HDD settings onto SD card.

Alarms (HDD) only the alarms will be recorded onto the SD card.

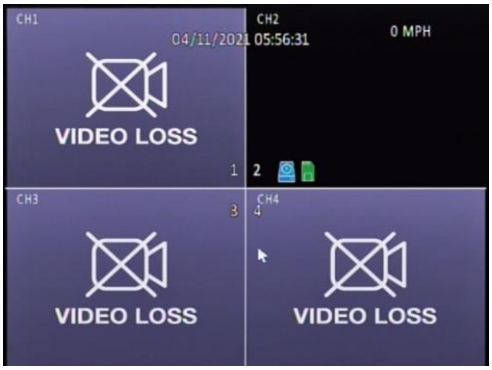
Note: When SD cards/HDDs are replaced, they must be formatted before using the MDR.

SD Write Resource Ratio calculated by (Stream bitrate / SD card full write speed). Bitrate determined by resolution, framerates and quality; SD card full write speed is a fixed value of Brigade SD card (12Mbps). This is a reference value for user to see and configure settings accordingly. Recommend this is set to value lower than 80%, in case the data rate exceeds SD card writing speed and results in data loss.

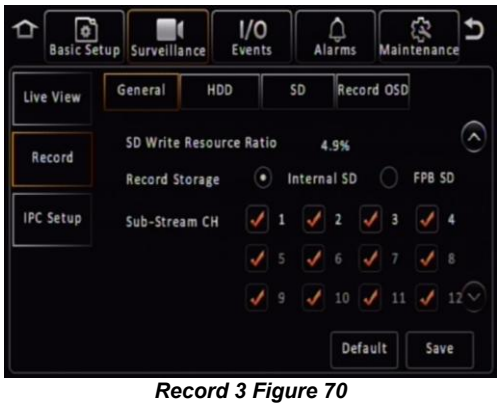
Note: This value cannot reflect correct status if using a 3rd party SD card.

Record Storage options are Internal SD or fireproof box. A fireproof box (optional accessory) is connected to the MDR via its USB-B port on the rear. By default, internal SD is chosen.

Sub-Stream CH by default enables all available channels. If the IP camera dedicated channels have not been enabled in **IPC Setup** (explained in chapter 5.2.3 IP Camera Setup), the channel box is greyed-out and unable to operate.



Disabled Channel 2 Live View Figure 69



Record 3 Figure 70

5.2.2.2 HDD

These settings are used to set the resolution, frame rate and quality per channel independently for main stream which stored in HDD/SSD.

Channel is used to identify the channel.

Channel Name is used for an 8-character name which each camera channel can be associated with. These can include lower/upper alphanumeric characters. This is displayed on the live OSD.

Enable Recording allows the activation/deactivation of the camera channel. This should be used if all camera channels are not utilized, to avoid video loss errors. For IP camera channels, all the settings will be greyed-out and unable to set. Users need to enable them firstly in IPC Setup page.

Resolution allows users to choose the resolution for each channel. The options auto adjust based on camera inputs. The options are CIF (lowest), WCIF, HD1, WHD1, D1, WD1 and AHD (720p, 960p and 1080p) (highest). For MDR-644 series models, you can set FULL HD 1920x1080 @12fps (PAL) / (NTSC) or HD 1280x720 @25fps (PAL) / 30fps (NTSC). By default, it is D1. If the set resolution is higher than the camera's actual resolution, the setting cannot be saved. Refer to Chapter *20 Specifications* for further information on each resolution.

Encode Standard options are H.265 and H.264. By default, set to H.264.

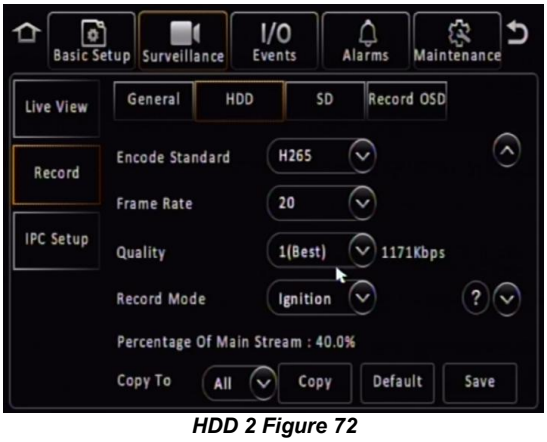
Note: For IP camera channels, since IP cameras have their own embedded settings, upon connecting to MDR, the MDR channel setting will automatically change to IP camera settings. Users may need to manually adjust the setting after connected.

Frame Rate allows users to choose different frame rates for different channels, depending on resolution settings. Options are 1 to 25 for PAL and 1 to 30 for NTSC. By default, it is 20.

Quality has 8 levels. Level 1 is the highest quality, whereas level 8 is the lowest quality. The value beside **Quality** represents stream data bitrate based on current setting (**Resolution**, **Framerate**, **Quality**, **Encode Standard**). This value can help users to estimate the video file size.

Record Mode has three modes available – all modes require the **IGNITION** signal to be applied, or timer auto-boot to be set up:

HDD 1 Figure 71



HDD 2 Figure 72

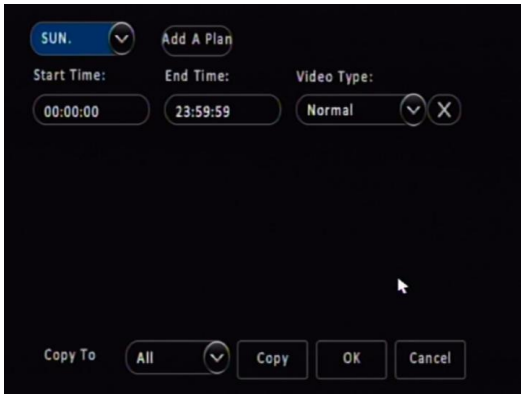
- **NORMAL** - allows continuous recording after powering up until the device shuts down. Alarm recording is included in this mode.
- **ALARM** - allows users to record only when an alarm has been triggered. Alarms can be configured to be activated by triggers or other alarms (such as under/over speed, G-Force, Panic Button, etc.)
- **TIMER** - allows users to specify timeframes in which the recording will be activated. Refer to the OSD map to program these timeframes.

Record Mode – Timer - Schedule allows users to choose schedules based on different days.

Click on the day and choose the desired day of the week. Then setup the Start Time, End Time and Video Type.

Video Type can be Normal or Alarm.

Note: This record mode timer prevents an MDR from turning off, but this timer is unable to control when an MDR turns on. This has a higher priority than the ON/OFF TIMER.



Record Mode – Timer Figure 73

Audio activation allows users to enable/disable the audio recording from the camera channels individually. This setting depends on the utilised cameras having microphones. There are 3 options, **Always Audio** (main Stream recordings can have audio, whether alarm recording has it or not, depending on alarm recording setting), **No Audio** (main Stream recording has no audio), **Alarm Audio** (only main Stream alarm recording can have audio, whether alarm recording has it or not, again depending on alarm recording setting). See *Chapter 5.4.1 General*.
Alarm Quality has 8 levels. Level 1 is the highest quality whereas level 8 is the lowest quality. Brigade recommends using a higher quality for Alarms for a higher level of image detail.

HDD 3 Figure 74

Encode Mode allows users to choose between Constant Bit Rate (CBR) and Variable Bit Rate (VBR). The difference is minimal as the Variable Bit Rate is not efficient as it involves more processing power and may introduce partial image distortion due to higher compression rates.

Audio Coding Format supports 3 types of audio format: ADPCM, G711U, G711A. By default, set to ADPCM.

Percentage of Main Stream displays resource occupation which is calculated based upon each channel settings. Main stream resource and Sub stream resource are calculated separately, each of them can go to 100%.

5.2.2.3 SD

In this SD setup page, the parameters are for defining sub stream which is typically used for SD card or online **Live View** via MDR-Dashboard 6.0. If SD card is used for alarm recording or HDD mirror recording, the SD card will take mainstream parameters (in HDD tab).

SD Figure 75

Channel is used to identify the channel.

Enable this controls which channels you would like to sub-stream video and save to the SD card. When using an MDR 504, channel 5 and 6 are not accessible and greyed out (channel 9 – 16 for MDR 508) until they been enabled in IP Setup. See *IPC Setup Figure 78*.

Encode Standard options are H.265 and H.264. By default, this set to H.264.

Audio activation allows users to enable/disable the audio recording from the camera channels individually. This setting depends on the utilised cameras having microphones. There are 3 options, **Always Audio** (sub-stream recordings can have audio, whether alarm recording has it or not, depending on alarm recording setting), **No Audio** (sub-stream recording has no audio), **Alarm Audio** (only sub-stream alarm recording can have audio, whether alarm recording has it or not, again depending on alarm recording setting). See *Chapter 5.4.1 General*.

Resolution can be setup per channel. Options are CIF, HD1, D1. These options are dependent on input to MDR.

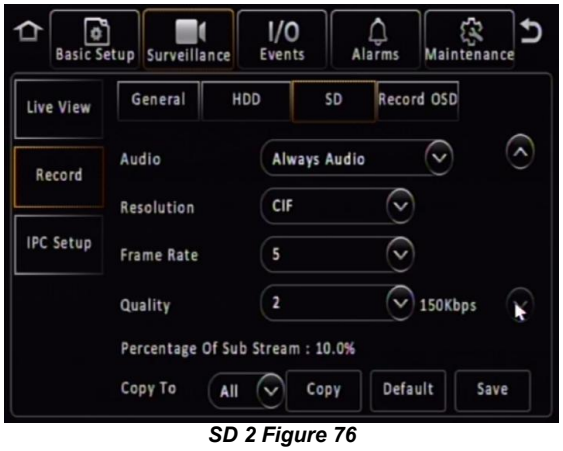
Frame Rate allows users to choose different frame rates for different channels depending on resolution settings. Options are 1 to 25 for PAL and 1 to 30 for NTSC.

Quality has 8 levels. Level 1 is the best quality whereas level 8 is the lowest quality. Brigade recommends using a higher quality for Alarms for a higher level of image detail. The value beside **Quality** represents stream data bitrate based on current setting (**Resolution**, **Framerate**, **Quality**, **Encode Standard**). This value can help users to estimate the video file size.

Copy to function is available to copy settings to all or individual channels.

Percentage of Sub Stream displays resource occupation which is calculated based on each channel's settings. Mainstream resource and Sub stream resource are calculated separately, each of them can go to 100%.

Note: if this value exceeds 100%, MDR will notify the user, and the setting cannot be saved.



SD 2 Figure 76

5.2.2.4 Record OSD

Record OSD refers to information that will be "burned" onto the video image. This means that if AVI is used for the export option, then the enabled information will be shown on the image.

The options are: **Date/Time**, **Vehicle Reg**, **Channel Name**, **G-Force**, **Speed**, **GPS**, **Vehicle Num** and **Alarms**.

You can change the position of each live OSD by using the **Setup** button.

By default, DATE/TIME, VEHICLE REG, CHANNEL NAME, SPEED and ALARMS are enabled.

Record OSD Figure 77

5.2.3 IP Camera Setup

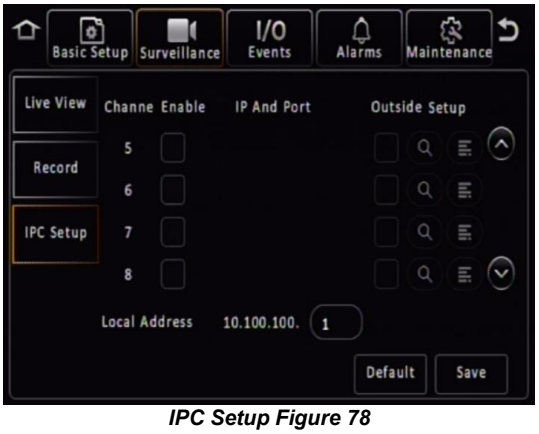
The MDR 600 Series supports direct connection with IP cameras via 6pin connector on the rear panel. Moreover, MDR-644 models support an additional 4 IP camera channels through an external Power Over Network (PON) switch.

IP connection on rear panel is plug-and-play, IPC1 – IPC4 represent display channel 5 – 8 by default. After being connected, the image will appear on the screen after approx. 20s without extra operations needed.

IP channels are also flexible compared to analogue channels. If an IP camera is connected to physical connector IPC1, the user can manually allocate it to any other channel in the IPC Setup page.

By default, the **LOCAL ADDRESS** for MDR itself is 10.100.100.1.

For more IP camera setup and operation, please refer to *IP Camera Operational Guide*.



IPC Setup Figure 78

5.3 Events

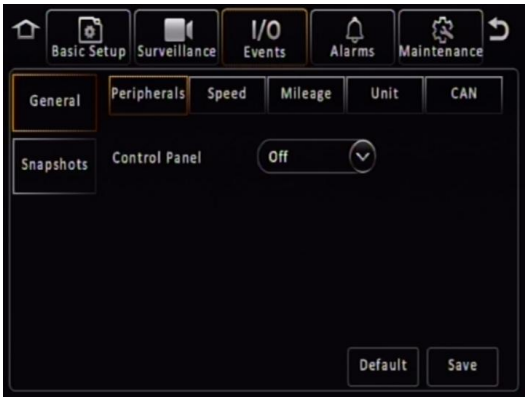
5.3.1 General

5.3.1.1 Peripherals

Remote Panel is an accessory that consists of 4 diagnostic LEDs, internal buzzer and a panic button. In a scenario where the MDR is installed in a box away from the driver or the MDR output is not being viewed, the remote panel LEDs and buzzer will alert the driver to any hardware or software faults. For MDR-641 models, The Remote Panel buzzer will work with Buzzer settings in Alarm Link Setup. See *Alarm Link Setup 2 Figure 90*.

The panic button can be used for varied scenarios. For example, when using a mobile network/Wi-Fi MDR, this button can be used to trigger real-time emails to the fleet manager.

Remote Panel Figure 79



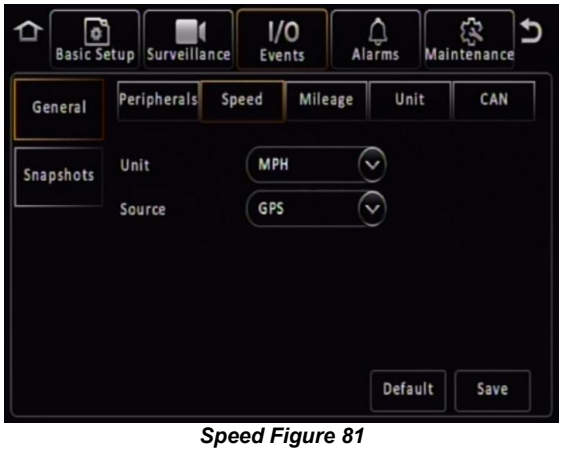
Peripherals Figure 80

5.3.1.2 Speed

Unit refers to the speed setting. This can either be in miles per hour (MPH) or kilometres per hour (km/h). By default, this is set to MPH.

Source has three options. GPS, Speed Pulse or CAN (for future use only). In the majority of applications GPS signal is the simplest to use. Brigade's MDR comes as standard equipped with a GPS antenna.

Speed source from the pulse is recommended when the GPS signal is absent or poor (e.g., mines or major city centres). The vehicle speed signal may be a more reliable source. By default, GPS is the source used.



Speed Figure 81

Speed Pulse - Calibration Mode has two options, Input Manually and Auto Correct. Auto Correct is currently unused.

To use input manually, connect the speed cables on the IO cable then click save. Start the vehicle and then click start. Drive for at least a minute with a minimum speed of 40 km/h or 25 mph. Once you have stopped the vehicle, click the finish button. Now, you will have a mileage value (from your drive). Input the mileage value into the box and click calculate. Finally, your pulse ratio has been calculated. Also, this supports inputting the **Pulse Ratio** manually if the user can obtain the correct value from the vehicle manufacturer, which should avoid further effort of driving and calculating. (This section can only be viewed by selecting "Speed Pulse" in the Source dropdown box).

Start is used to begin the analysis of your drive.

Calculate is used to obtain the pulse ratio once you have entered the mileage value.

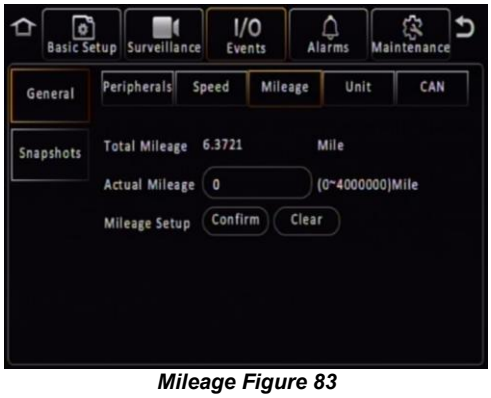
Speed Pulse Figure 82

5.3.1.3 Mileage

Total Mileage displays the total mileage of the vehicle once it has been confirmed in mileage setup. The speed unit controls whether this value is displayed in miles or kilometres.

Actual Mileage is a field that is manually entered. Type the current mileage value once the MDR is installed.

Mileage Setup is used to submit the mileage value to the MDR memory, click confirm once you are happy with the value. Click clear to zero the total mileage value. Prompts will display to ask for user confirmation.

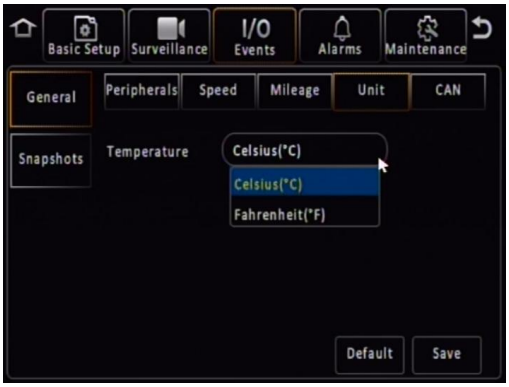


Mileage Figure 83

5.3.1.4 Unit

Temperature defined which temperature unit to display on MDR OSD. Users choose from Celsius(°C) and Fahrenheit(°F). Upon selection, the device temperature will switch the value accordingly.

Temperature Figure 84



Unit Figure 85

5.3.1.5 CAN

This feature is reserved for future and is not currently available.

5.3.2 Snapshots

Snapshot refers to an image of the video data displayed on an MDR channel.

5.3.2.1 Time Snap

Time Snap must be ticked to enable all the options. You can have a maximum of 8 snap entries. By default, time snaps are disabled.

Delete removes a time snap entry. You cannot delete entry 1.

Snap Link Setup is where your time snap is setup.

Start time refers to the time you would like time snaps to start.

End time refers to the time you would like time snaps to end.

There is no limitation on the number of snaps, but this uses the same storage limit as recordings. If the storage is full, then the oldest snap will be overwritten. Snaps are stored by vehicle registrations and time.

When exporting snaps to a USB flash drive, a folder named picture found in the following path F:\MDR-644\"vehicle registration"\"date"\picture will be created.

Channel is the intended channel for time snap setup.

Snap Enable controls whether time snaps are enabled for that channel. To activate the other menu options, snap enabled must be ticked.

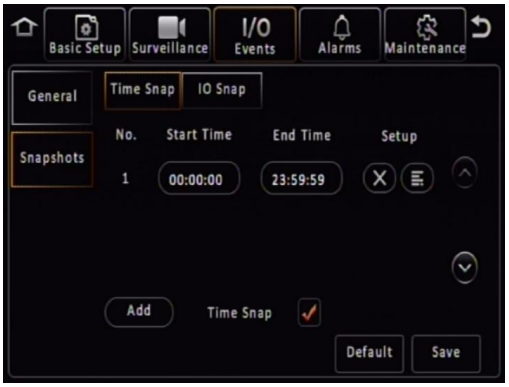
Resolution refers to the time snap resolution. The options are: CIF, WCIF, HD1, WHD1, D1, WD1 and AHD (720p, 960p and 1080p). This is dependent on the input resolution of the cameras connected to the MDR.

Quality represents the image quality of the snapshot. There are 8 levels. Level 1 is the highest quality whereas level 8 is the lowest quality. By default, this is 1.

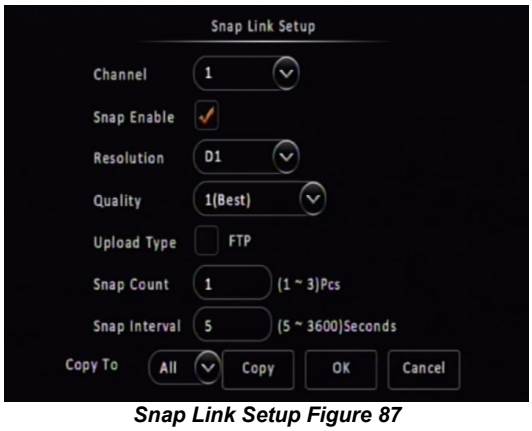
Upload Type support to save snapshot to FTP server which has been defined in *Chapter 5.1.7.1 FTP Server.*

Snap Count refers to how many snaps will be taken. A maximum of 3 snaps can be taken for a minimum of 5 seconds. By default, this is 1.

Snap Interval is the period between each snap which can be between 5 and 3600 seconds. By default, this is 5 seconds.



Time Snap Figure 86

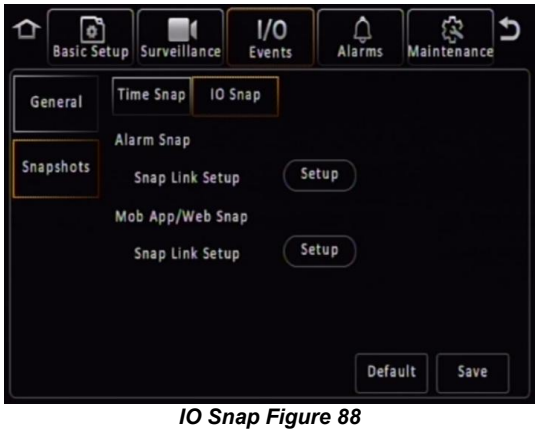


Snap Link Setup Figure 87

5.3.2.2 IO Snap

Alarm Snap Link Setup are used for taking snaps based on triggered alarms only.

Mobile App / Web Snap Link Setup is unused currently.

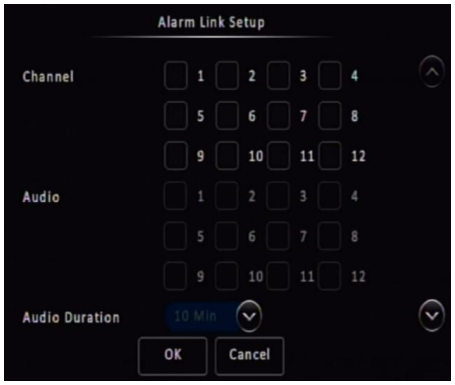


IO Snap Figure 88

5.4 Alarms

5.4.1 General

There are various alarms that can be configured in the MDR. Such as speed, panic button, IO, video loss, motion detection, blind detection, G-Force, Geo-Fencing and HDD/SD Error. Alarms and events are different. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server. (Please click into the Alarm Link before the following function can be viewed. See Speed Alarm Figure 92). **All alarms use the Alarm Link Setup page. (See *Alarm Link Setup 1 Figure 89*)**



Alarm Link Setup 1 Figure 89

Channel is used to choose which channels you would like to mark as alarm recordings (Alarm recordings will show as red on playback time bar on both MDR OSD and MDR-Dashboard software). The options are all available channels.

Audio is used to determine whether this alarm recording will have audio recorded as well. This feature can help in audio-sensitive situations, users can enable/disable it based on their condition. (These audio settings have a lower priority than audio setting in Record->HDD setting and Record->SD setting, see *HDD 3 Figure 74* and *SD Figure 75*). There may be different usage scenarios, consequences listed below:

1. If set to **Always Audio** in HDD Settings, but **Audio** is disabled in alarm settings, normal recordings will have audio, but alarm recordings will not.

2. If set to **No Audio** in HDD settings, it does not matter if **Audio** is enabled or disabled, in alarm settings, both normal and alarm recordings will have no audio.

3. If set to **Alarm Audio** in HDD settings and **Audio** is enabled in alarm settings, only the alarm recording will have audio, normal recordings will not.

Other common scenarios:

1. If in two different types of alarms, one alarm enables the audio, another alarm disables the same channel. When both alarms activate simultaneously, the alarm recording has audio.

2. If in two different types of alarms, both alarms enabled audio for the same channel, but set to different time length. When both alarms activate simultaneously, the alarm recording follows the longer time audio setting.

Alarm Link Setup 2 Figure 90

Audio Duration is to define how long to keep audio recordings after alarm happens. By default, this is 10 minutes.

Post Record specifies the period of recording appended at the end of an alarm. For instance, if a sensor is triggered for 1 sec and the alarm duration is 30 seconds and the post recording is 15 seconds, the total amount of recording time will be 45 seconds. By default, this is 10 minutes, the same as Audio Duration.

Lock represents whether an alarm cannot be overwritten by the MDR. When the retention expires, the locked files will automatically be unlocked and deleted. Refer to *Chapter 5.2.2.1 General* on how to set lock expiry timeframes.

Alarm Output Link refers to the 2 outputs found on the IO cable. These outputs can be activated based on a linked alarm. Enable this for a high on the alarm outputs.

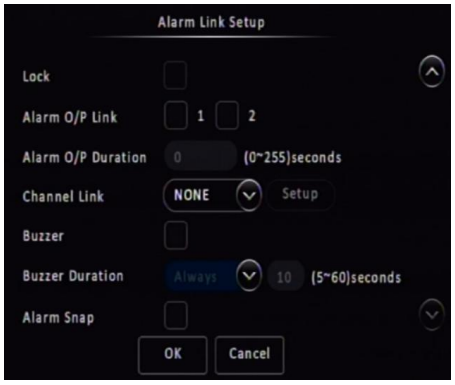
Alarm Output Duration represents the amount of time the alarm output will be active for. This can be between 0 and 255 seconds.

Channel Link can be used to display a single or quad configuration.

Buzzer refers to the built-in buzzer inside the MDR docking station or Remote Panel buzzer when using it with MDR 641 Series. Once this is enabled the duration can be configured.

Buzzer Duration can be configured in two ways depending on the type of alarm being triggered. The options are ALWAYS (the buzzer will sound continuously without interruption) or TIMER (the buzzer will sound for the defined period). Timer can be set between 5 and 60 seconds. For example, video loss is a catastrophic failure, and Brigade suggests using ALWAYS for such an alarm.

Alarm Snap can be enabled, the settings are based on the alarm snap link setup. Refer to 5.3.1.4



Alarm Link Setup 3 Figure 91

5.4.1.1 Speed Alarm

Overspeed Enable is used to activate overspeed alarms or events.

Alarm Type can either be alarm or event. Alarms are saved to the Centre Server (depending on MDR model, requires 4G/Wi-Fi)) and are displayed in the alarm log in Live view in MDR-Dashboard 6.0 Server mode.

Events are stored, but do not get saved to the Centre Server. Events are not displayed in the live view alarm log.

Trigger Setup is used to control the conditions for the trigger. *(See Speed Trigger Figure 93)*

For Alarm Link Setup details refer to 5.4.1 General.

Early Difference is an early warning for drivers to curb their speed. For example, if you set the speed to 70mph, and early difference is set to 5mph, then when your speed reaches 65mph, the MDR will sound a short beep to warn the driver. By default, early difference is set to 10 mph.

Speed refers to threshold value for which speed will be considered an overspeed and recorded as an alarm.

Duration Time specifies different lengths of time which allow for longer/shorter alarm durations. If the alarm duration is set to 30 seconds and a short 2 second alarm occurs, this would be treated as a 30 second alarm. Can be set between 0 to 255 seconds. By default, the duration time is 10 seconds.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored. This is applied when indicators or hazard lights are connected to an input trigger where the off time is ignored. By default, this is 10 seconds.

Speed Alarm Figure 92

Speed Trigger Figure 93

5.4.1.2 Panic Alarm

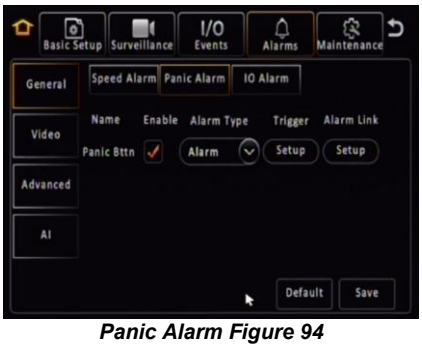
Panic Button Enable refers to the panic button found on the external remote panel. This is connected to the MDR via the IO cable. By default, this alarm is enabled. *Refer to Panic Alarm Figure 94*

Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

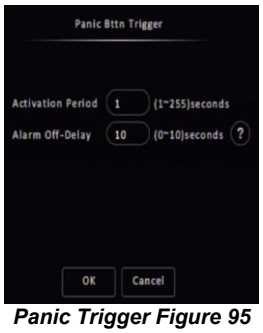
For Alarm Link Setup details refer to 5.4.1 General. Clicking Trigger Setup will display *Panic Trigger Figure 95*.

Activation Period refers to how long the panic button needs to be pressed for, to be considered an alarm (high). By default, this is 1 second.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored. By default, this is 10 seconds.



Panic Alarm Figure 94



Panic Trigger Figure 95

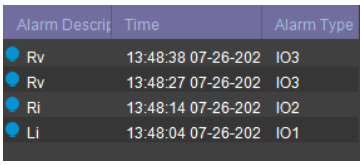
5.4.1.3 IO Alarm

IO Enable allows users to set which trigger input wires are used. If a wire is not used, set enable to off. IO1 has the highest priority and IO8 has the lowest.

Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

For Alarm Link Setup details refer to 5.4.1 General.

Sensor Name is filled in for input sensor information. This is usually completed by the installer to aid in identifying an input trigger in the future. Up to 8 alphanumeric characters can be used. This is an important field to be filled in, it is displayed under alarm description in the event log within MDR-Dashboard 6.0 software.



Alarm Display on MDR-Dashboard software 96

OSD Name is a 2-alphanumeric character identifier. This is an important field to be filled in as this information is then carried over to the MDR-Dashboard 6.0 software. This is shown in frame information. It is also shown on the LIVE OSD and the RECORD OSD. By default, Brigade uses IO1 for left indicator (Rv), IO2 for right indicator (Li), IO3 for reverse (Ri) and IO4 for brake (Br). The IO wires have a priority with OI1 being the highest and IO8 the lowest.

Frame Information 97

It is possible to duplicate the field information to all 8 input triggers, but this is not advised as each trigger will be connected to varied sources.

Sensor Uses:

1) If **Left Steering** and **Right Steering** is chosen, the activating status of this IO will be considered in AI alarm judgement, especially for the Distraction and LDW. If the MDR receives the signal from those IOs, then driver checking mirror and changing lanes action will be considered normal operation without triggering any alarms.

2) If **Reverse** is chosen, a mirror option appears under Channel Link setting when the user selects the link to single channel. See *IO Reverse Mirror Figure 100*. This aids the driver during manoeuvring. If **Privacy** is chosen, this IO will be used to trigger on/off **Privacy** mode. For further details please refer to *Chapter 5.4.2.4 Privacy Mode*. Remaining options are currently not in use, these are reserved for future development.

Trigger Source to define where the signal comes from. The user can choose between **Voltage**, **CAN** (not currently available for future use) and **Pulse**. Under **Voltage**, high/low voltage level can trigger the sensor. Under **Pulse**, some pulse signals such as left / right steering can trigger the sensor.

IO Set is a field that controls whether an input trigger will trigger on a low or high signal. Determines whether the trigger sensor is activated with a high or low voltage.

Copy please refer to Section 5.1.8 Surveillance for details.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored.

IO Alarm Figure 98

IO Trigger Figure 99

IO Reverse Mirror Figure 100

5.4.2 Video

5.4.2.1 Video Loss

Video Loss Enable is used to alert users to a loss of video signal on any of the enabled camera input channels. By default, this is enabled.

Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

For Alarm Link Setup details refer to Chapter 5.4.1 General.

Note: Buzzer set to always on when Video Loss alarm happens.

Video Loss Alarm Figure 101

Video Loss Setup Figure 102

Channel is used to choose which channels you would like the alarms to be triggered from. All channels ticked by default.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored. By default, this is 10 seconds.

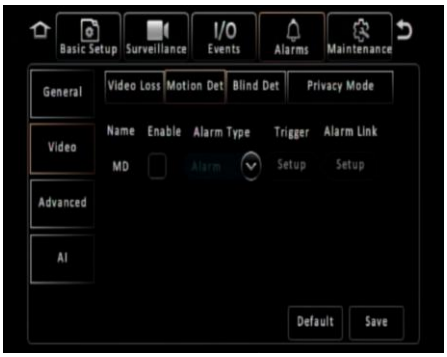
5.4.2.2 Motion Detection

Motion Detection Enable is used to analyse camera inputs for motion. By default, this is disabled.

Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

For Alarm Link Setup details refer to 5.4.1 General.

Channel is used to choose which channels you would like the alarms to be triggered from.

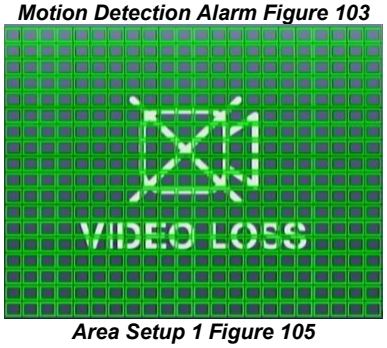


Motion Detection Alarm Figure 103

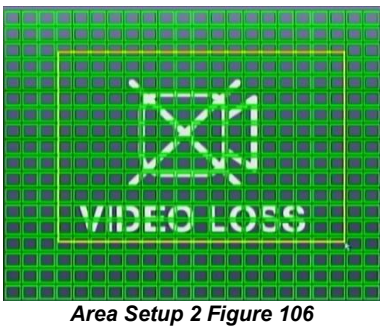
Motion Detection Setup Figure 104

Sensitivity each channel can have different sensitivities and different areas of detection. 1 represents most sensitive and 8 is the least sensitive.

Area Setup lets you choose the area of interest in the camera image. Green blocks are areas where motion will be detected. Using the mouse, drag and drop a yellow square to deactivate areas that you want to be ignored. To reactivate the area, use the mouse to drag and drop over the deactivated area.



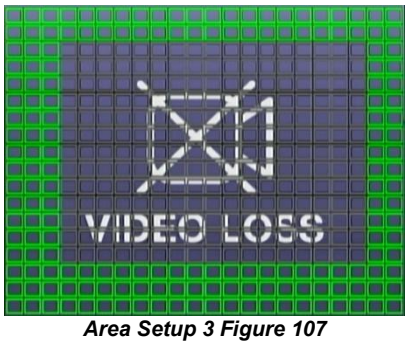
Area Setup 1 Figure 105



Area Setup 2 Figure 106

Activated determines when motion detection will be active. The three options are **Shutdown Delay**, **Ignition On** and **Both**. Shutdown delay means that motion detection will only be active once the ignition has been turned off, the period depends on the shutdown delay settings. Ignition On means that motion detection will be active whenever the MDR has ignition applied. Both works for Shutdown Delay and Ignition On condition.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored. By default, this is 10 seconds.



Area Setup 3 Figure 107

5.4.2.3 Blind Detection

Blind Detection Enable is used to analyse camera inputs for blind images. By default, this is disabled. Blind detection occurs when a camera is obstructed by a large object or deliberately. It is mostly used to tackle acts of vandalism.

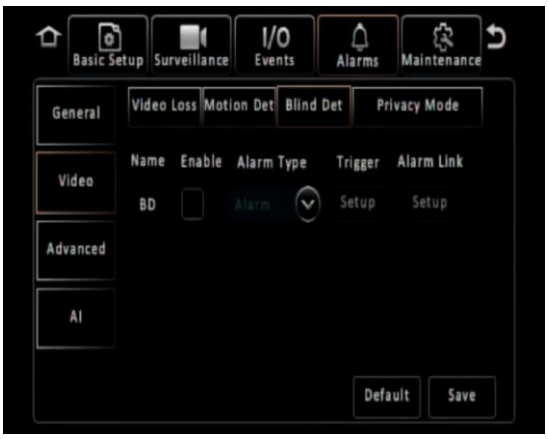
Note: Rapid light changes will also cause Blind Detection triggered, therefore, it is not recommended when using cameras with infrared illumination.

Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

For Alarm Link Setup details refer to 5.4.1 General.

Channel is used to choose which channels you would like the alarms to be triggered from.

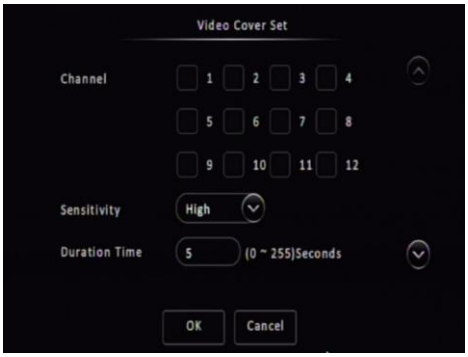
Sensitivity has three options; High, Middle and Low.



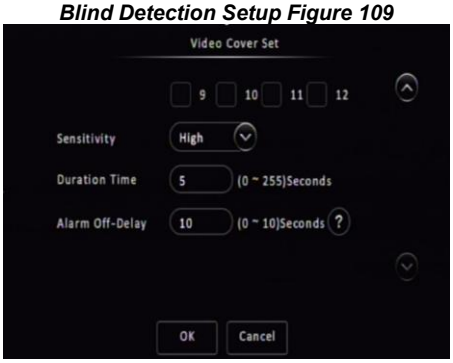
Blind Detection Alarm Figure 108

Duration Time specifies different lengths of time which allow for longer/shorter alarm durations. If the alarm duration is set to 30 seconds and a short 2 seconds alarm occurs, this would be treated as a 30 second alarm. Can be set between 0 to 255 seconds. By default, this is 5 seconds.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored. By default, this is 10 seconds.



Blind Detection Setup Figure 109



Blind Detection Setup 2 Figure 110

5.4.2.4 Privacy Mode

Privacy Mode is used to close camera and stop recording when the driver does not want to be recorded. By default, this is off.

Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

Privacy Mode does not have Alarm Link Setup.

Channel is used to choose which channels you would like to stop recording when privacy mode is activated.

Privacy Method has two options: **IO** and **Ignition OFF**.

If **IO** is selected the driver can activate the privacy mode by triggering the dedicated IO (the **Sensor Usage** in IO alarm must be set to privacy mode). In IO setup, the **Signal Type** can be chosen from **Short Signal** or **Long Signal**. If choosing **Short Signal**, triggering the IO once will enter the privacy mode no matter what happens to the IO afterwards. If choosing the **Long signal**, when the IO is triggered, the device will enter Privacy Mode, if IO is dismissed, device will exit privacy mode immediately.

If **Ignition OFF** is selected, the privacy mode will be activated when the ignition signal is cut off.

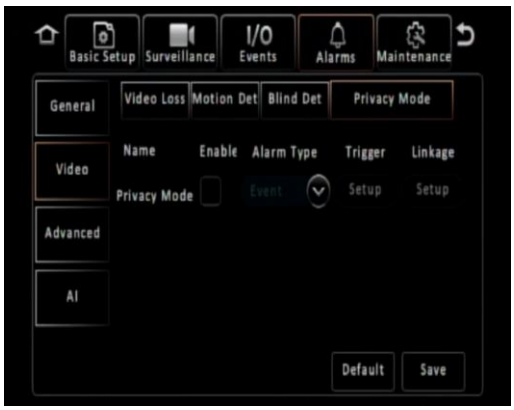
Exit Method defines how to deactivate the Privacy Mode and put camera(s) back to normal recording state. **Exit Method** can choose multiple conditions, if more than one method has been chosen, fulfilling either one of them will deactivate the **Privacy Mode**.

Note: The combination: **Ignition OFF** (enter) + **Long Signal IO** (exit) is not supported.

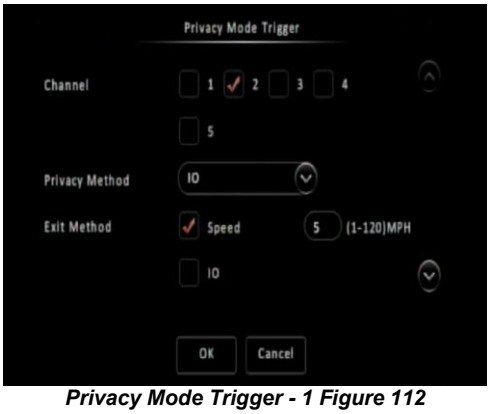
Enable AI Mp3 Voice currently not in use.

Alarm Voice Enable can be ticked to allow an audio notification for the user while entering or exiting the privacy mode. If entering the mode, they will hear “Privacy Mode Enable”, if exiting the mode, they will hear “Privacy Mode Disable”.

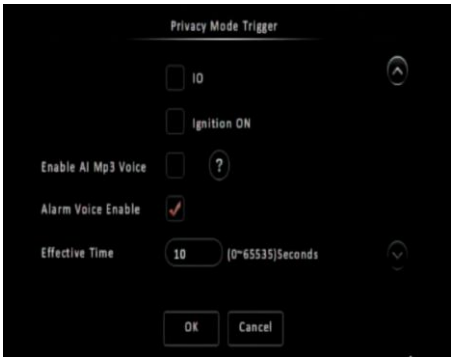
Effective Time works when **Privacy Method** is switched to **Ignition OFF**. It determines how many seconds before entering the mode. By default, this set to 10, which means after 10 seconds ignition off, the device will enter privacy mode.



Privacy Mode Alarm Figure 111



Privacy Mode Trigger - 1 Figure 112



Privacy Mode Trigger - 2 Figure 113

5.4.3 Advanced

5.4.3.1 G-Force

G-Force Enable is used to analyse the MDR's g-force values. By default, this is disabled.

Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

Real-Time represents the magnitude of gravity acting on an MDR in three directions (users facing MDR front panel, X represents left/right; Y represents forward/backward; Z represents up/down)

Auto-Calibration is On by default. After the device is powered On, if it can obtain at least 3 times driving data which has acceleration and deceleration within the speed 10km/h to 40km/h, the device will use accumulated G-Force data and internal algorithm to calibrate the 6-axis G-Sensor value, including X, Y, Z and Row, Pitch and Yaw.

[Manual] **Calibrate** is greyed out if Auto-Calibration is on. If Auto-Calibration fails, users can disable it and use the manual Calibration button to refresh 6-axis G-Sensor values.

Installation Angle displays the angle of the installed device. Roll-pitch-yaw angles obtained from internal 6-axis G-Sensor.

100HZ G-sensor value enabled to let the G-sensor work on maximum sampling rate. This will create G-Force data 100 piece per second, which improves the accuracy of the G-sensor greatly but also increases the size of the metadata drastically. It is recommended that this feature is disabled for everyday use. The default sampling rate is 10Hz.

Self-checking is to examine if the Auto-Calibration works well, especially when the auto-calibration result is abnormal. The G-Sensor will check 6-axis data to make sure it matches the auto-calibration value.

For Trigger:

Based on the accumulated data obtained from built-in G-Sensor, the device can make a judgment and report alarms on the driver's driving behaviour such as **Harsh Braking**, **Hard Acceleration**, **Harsh Left Turn** and **Harsh Right Turn**.

Offset is defined by complex algorithms and Brigade recommend leaving the value as default. By default, there are three sets of Offset values that can be chosen, determined by the vehicle's weight: **Light Duty** (≤6 ton), **Medium Duty** (≤14 ton) and **Heavy Duty** (>14 ton). Users can select the setting based on their vehicle specification.

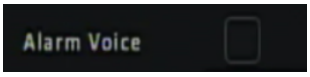
Note: The offset value can be increased or decreased if the alarm is too easy/hard to trigger. But the effect is not linear, it must be tested and determined for the users' specific vehicle.

Speed defines this alarm will be able to trigger when the vehicle speed reaches a certain value.

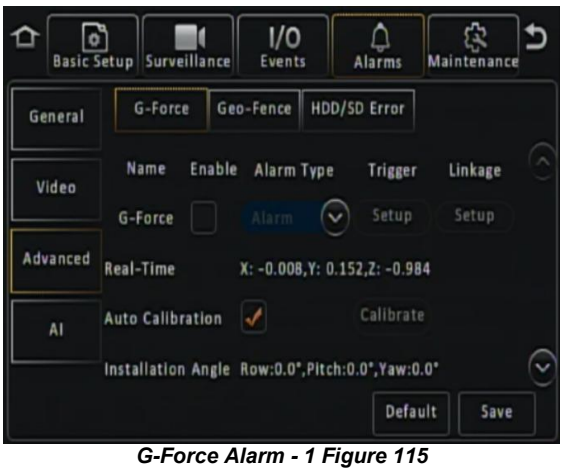
Shock represents collision warning based on received G-Force data. The X, Y, Z values refer to the G value which will trigger the alarm. By default, X and Y are 1G, Z is 2G.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored. By default, this is 10 seconds.

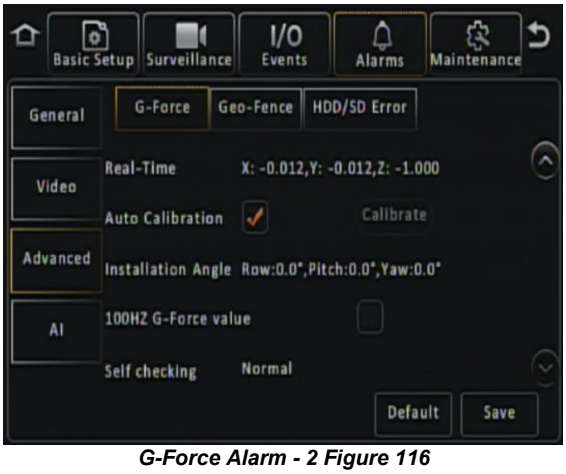
For Alarm Link Setup details, most of the settings can refer to 5.4.1 General. This alarm has an individual setting for **Alarm Voice**, which can output voice messages when an alarm occurs. For more information, please refer to *Chapter 13 MDR Audio Alerts Summary*.



G-Force Alarm Voice Figure 114



G-Force Alarm - 1 Figure 115



G-Force Alarm - 2 Figure 116

G-Force Trigger - 1 Figure 117

G-Force Trigger - 2 Figure 118

5.4.3.2 Geo-Fence

Geo-Fence Enable is used for mobile network MDR models. It must be enabled prior to using this feature.

Geo-fences are used to send an alarm if a vehicle leaves or enters a geographical region. This region is setup by the user in MDR-Dashboard software.

Geo-fences are setup in MDR-Dashboard - Server mode. Please refer to the Network Connectivity SW & Infrastructure Manual.

In **Geo-Fence Alarm** Link Setup, it supports a **Non-stop** feature for IO output. If Non-stop is enabled, the Alarm O/P duration will be greyed out. This allows the MDR to keep a continuous high-level output if it is in the Geo-Fence area.

Geo-Fencing Alarm Figure 119

Non-Stop Feature Figure 120

5.4.3.3 HDD/SD Error

HDD/SD Error Enable is an alarm which indicates when the HDD/SD has a major malfunction where data can no longer be written to the storage medium. When the system detects the HDD failing to connect / work, it will cut power to the HDD and supply power again to reset and see if the action can bring it back to normal. This process would execute 3 times, if the HDD has still not recovered, then this alarm will be generated and output.

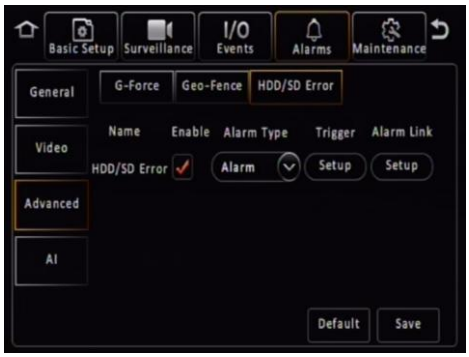
Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

Alarm Off-Delay is a period in which rapid activations/deactivations can occur, which must be ignored. By default, this is 7200 seconds (2 hours).

Lock Alarm Off-Delay by default is on. When it is not enabled, after the first alarm has been triggered, if another one triggered within the **Alarm Off-Delay** period, this alarm will be subdued as it should be, but the **Alarm Off-Delay** counting will be refreshed and count from 0 again. Enabling it means the **Alarm Off-Delay** is a hard-set time, no matter how many alarms happen within this period, it won't affect or refresh the counting.

For Alarm Link Setup details refer to 5.4.1 General.

Note: Buzzer set to 10 seconds when HDD/SD Error alarm happens.



HDD Error Alarm Figure 121

HDD Error Setup Figure 122

5.4.4 AI

5.4.4.1 ADAS

ADAS (Advance Driving Assistant System) supports various alarm/alerts by image analysing and processing from the front view camera IP-FFC-AI-01.

Alarm Type can either be alarm or event. Alarms are reported to the Server Centre. Events are stored but do not get reported to the Server Centre.

Trigger settings are different for each individual alarm.

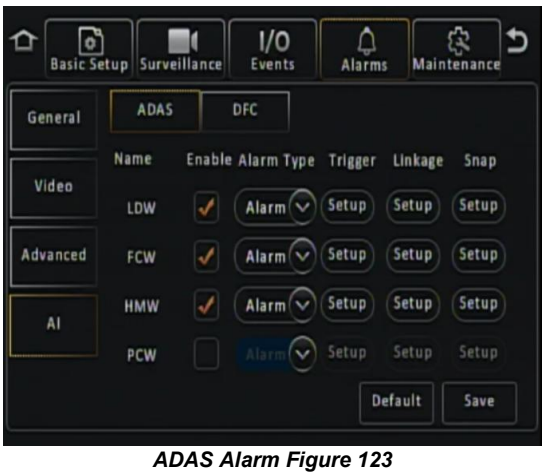
LDW (Lane Departure Warning) by detecting road lanes and left/right turning signals to give alerts when it detects unintended lane departure. By default, this is on.

Judgement: vehicle is crossing lanes without left/right turning signal enabled.

Level 1 alerts: (speed 45 – 70mph) TTS broadcast "Beep, Lane Departure."

Level 2 alerts: (speed ≥70mph) high pitch "beep beep".

FCW (Forward Collision Warning) by detecting the distance between the vehicle in front and the drivers vehicle, calculating with the vehicle speed to give alerts. By default, this is on.



ADAS Alarm Figure 123

Judgement: vehicle has great possibility to crash within seconds if vehicle in front brakes abruptly.

Level 1 alerts: (speed 31 – 50mph) TTS broadcast “Collision warning, collision warning”.

Level 2 alerts: (speed ≥50mph) high pitch “beep beep”.

HMW (Headway Monitoring Warning) by detecting the relative distance between the vehicle in front and the drivers vehicle, calculating with vehicle speed to give alerts. By default, this is on.

Judgement: vehicle has a high possibility to crash within seconds.

Level 1 alerts: (speed 31 – 50mph) TTS broadcast “Beep, unsafe following distance.

Level 2 alerts: (speed ≥50mph) high pitch “beep beep”.

PCW (Pedestrian Collision Warning) currently not in use.

Sensitivity refers to how sensitive this alarm should be triggered. Options are High, Medium, Low and User-defined. Recommend keeping default settings testing and custom sensitivity setting testing must be carried out prior to use.

Duration specifies when to trigger this alarm once a detection fulfils, for how many seconds. This setting only exists on HMW. If the dangerous following distance remains on for 2 (default value) seconds, the HWM alarm will go off.

Effective Time defines the device only allows this alarm to be triggered once during this period.

For most settings in Alarm Link Setup details refer to *Chapter 5.4.1 General*. Apart from that, AI alarms support two individual settings.

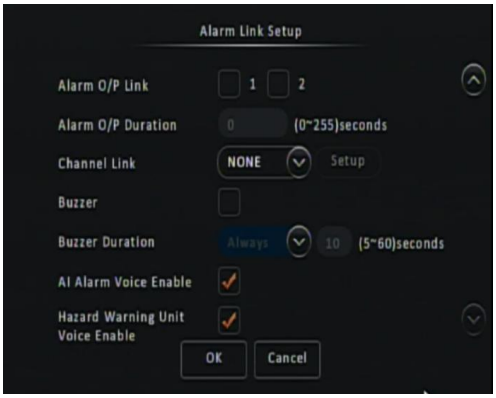
AI Alarm Voice Enable allows MDR to output audio alerts to remind driver when alarm happens. These alerts will be output from connected monitors.

Hazard Warning Unit Voice Enable allows a connected Hazard Warning Unit making a beep noise to notify the driver. Disabling it will curb the voice alert, but not the visual alerts from Hazard Warning Unit screen.

Snap allows to setup automatic snapshot when the alarm has been triggered. Users can define how many snapshots to take on which channels. After an alarm happens, users can export snapshot from MDR. Exporting steps please refer to *Chapter 5.5.2.1 Data Export*.

FTP only used when the device connected with an FTP server. For details, please refer to *Chapter 5.1.7.1*.

FCW Trigger Figure 124



AI Alarm Link Figure 125

ADAS Alarm Figure 126

5.4.4.2 DFC

DFC (Driver Facing Camera) supports various alarm/alerts by image analysing and processing from the driver facing camera IP-DFC-AI-XX-01.

Alarm Type can either be alarm or event. Alarms are reported to the Server Centre. Events are stored but do not get reported to the Server Centre.

Trigger settings are different for each individual alarm.

Fatigue Driving by detecting driver eye movements to determine if there is a driver that is drowsy or falling asleep. By default, this is on.

Judgement: eyes blinking frequency / closed period exceeds threshold.

Level 1 alerts: (speed 19 – 100mph) TTS broadcast “Fatigue driving, please rest now.”

Level 2 alerts: (speed ≥100mph) high pitch “beep beep”.

No Driver by detecting driver face movements to determine if there’s a driver seated in the driving seat. By default, this is on.

Judgement: No face has been detected.

DFC Alarm Figure 127

Level 1 alerts: (speed ≥30mph) TTS broadcast “Beep, no driver detected.”

Phone Call by detecting the moving object around drivers’ face/ear.

Judgement: An object shaped like a mobile phone has been detected close to drivers’ ear or in hands.

Level 1 alerts: (speed 3 – 100mph) TTS broadcast “Beep, phone detected.”

Level 2 alerts: (speed ≥100mph) high pitch “beep beep”.

Smoking by detecting the cigarette stick features and body gestures.

Judgement: A cigarette feature has been detected for a period.

Level 1 alerts: TTS broadcast “Beep, smoking detected.”

Level 2 alerts: high pitch “beep beep”.

Distraction by detecting driver face and eye movements. Supports custom moving conditions: Left, Right, Up and Down.

Judgement: certain movement has been detected and no left / right turning signal has been enabled (rule out the legal observation movement before turning the vehicle).

Level 1 alerts: (speed 19 – 100mph) TTS broadcast “Beep, driver distraction.”

Level 2 alerts: (speed ≥100mph) high pitch “beep beep”.

Yawn by detecting the position of the upper and lower lips and its opening amplitude value.

Judgement: when the amplitude value exceeds a certain threshold and lasts for the certain duration.

Level 1 alerts: (speed 3 – 100mph) TTS broadcast “Yawning, please drive carefully.”

Level 2 alerts: (speed ≥100mph) high pitch “beep beep”.

Seatbelt by detecting seatbelt shape across drivers’ body.

Judgement: No seatbelt has been detected for a period.

Level 1 alerts: (speed 3 – 100mph) TTS broadcast “Beep, please fasten seatbelt.”

Level 2 alerts: (speed ≥100mph) high pitch “beep beep”.

Note: Two **Alarm Mode** options available for **Seatbelt**.

Normal Mode will constantly check seatbelt and output alarms when triggered and outside the **Effective Time** period.

Regular Inspection will turn on the checking mechanism from time to time, spare the device calculating resource and reduce the chance for false positive alarms. By choosing this, the **Sensitivity** and **Effective Time** will stop taking effect, instead, a new setting called **Inspection Interval** initiates which determines after how much time the device can check for Seatbelt once. Each checking lasts for 10 seconds.

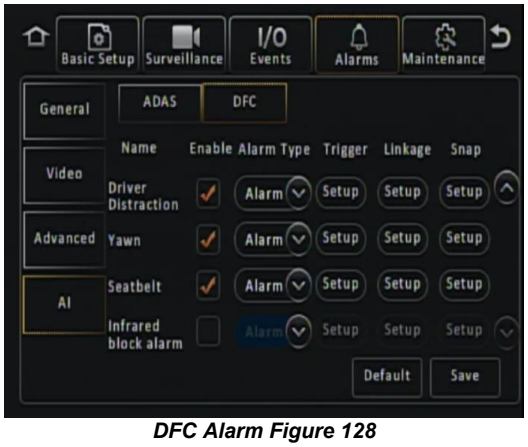
Infrared block alarm is currently not in use.

Sensitivity refers to how sensitive this alarm should be to trigger. Options are High, Medium, Low and User-defined. Recommend keeping default settings and custom sensitivity setting testing must be carried out prior to use.

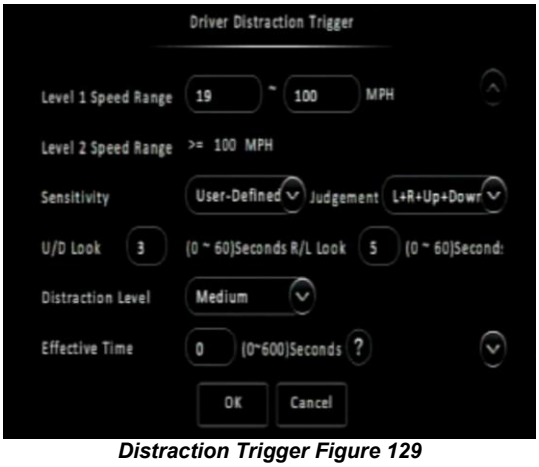
Effective Time defines the device only allows this alarm to be triggered once during this period.

Judgement (available on Distraction) has options **L+R**, **Up+Down** and **L+R+Up+Down**. They refer to different conditions of left / right / up / down head movement. Each condition can define detecting periods.

Distraction Level (available on Distraction) refers to the turning degrees of drivers’ head. Setting to **high** will trigger the alarm when head slightly turned. Setting to **medium** or **light** can allow larger turning angle without triggering the alarm. This is used to avoid false alarms triggered by normal head movement.

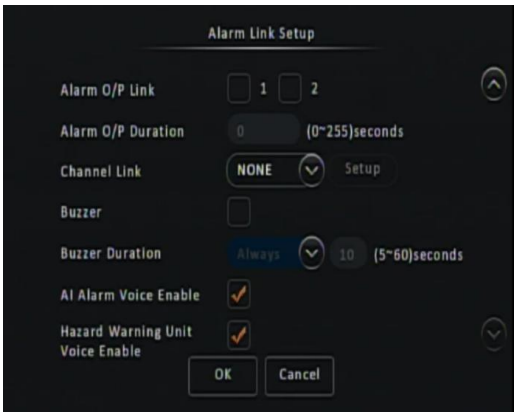


DFC Alarm Figure 128



Distraction Trigger Figure 129

Seatbelt Trigger Figure 130



Alarm Link Setup Figure 131

For most settings in Alarm Link Setup details refer to *Chapter 5.4.1 General*. Apart from that, AI alarms support two individual settings.

AI Alarm Voice Enable allows MDR to output audio alerts to remind the driver when alarm happens. These alerts will be output from connected monitors.

Hazard Warning Unit Voice Enable allows connected Hazard Warning Unit making beeping noise to notify the driver. Disabling it will curb the voice alert, but not visual alerts from Hazard Warning Unit screen.

Snap allows to setup automatic snapshot when the alarm has been triggered. Users can define how many snapshots to take on which channels. After alarm happens, users can export snapshot from MDR. For exporting steps, please refer to *Chapter 5.5.2.1 Data Export*.

FTP only used when the device is connected with an FTP server. For details, please refer to *Chapter 5.1.7.1*.

DFC Alarm Figure 132

5.5 Maintenance

A bus-powered USB hub (minimum of 2 USB ports for USB mouse and USB flash drive) will be required to export/import configuration, network files and geo-fence files. Please note Config Files are created by the user.

5.5.1 Configuration

5.5.1.1 Config File

Config File Export creates a configuration file and saves this to a USB flash drive. This file includes all settings except network and geo-fence related settings. This file can only be read by an MDR 600 Series model.

A configuration file named CONFIG.CONFIG will be created on the root of the USB flash drive.

Warning: **Network settings and Register Info settings are not contained in a configuration file, to support MDR fleet setups with an identical configuration file.**

Note: If a configuration file with the same name is present, this will be overwritten.

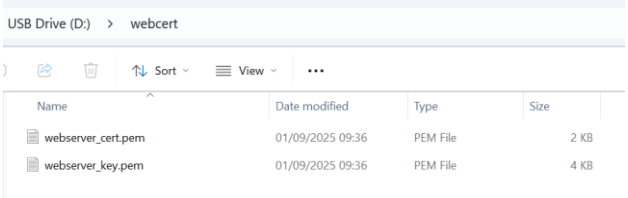
Config File Import is used when users have an existing configuration file on the flash drive and wish to import those settings to the MDR.

AI Config File Export creates a configuration file only for AI related settings, but doesn't include measurements and unit type in the **Algorithm** menu. This is considering 1) each vehicle install condition cannot be the same, whereby each measurement will be used for calibrating the algorithm and must be measured and input manually. 2) for fleet operation, if any AI alarm settings need to be changed, users can export and import AI Config files between different vehicles without affecting the core calibration data.

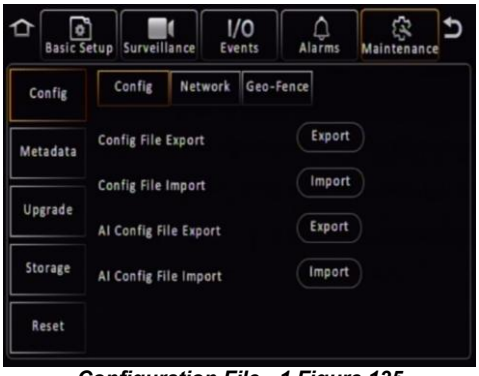
AI Config File Import is used when users have an existing AI configuration file on the flash drive and wish to import those settings to the MDR.

Import Ethernet HTTPS Certificate and Key is used to import a new encryption key and certificate when the built-in ones have expired.

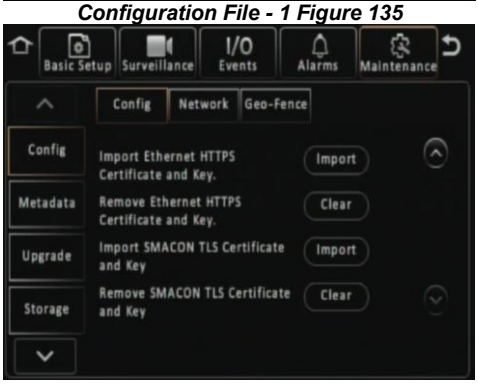
For importing, place the new key and certificate file in a folder named **webcert** under the root directory of the flash drive. Rename the certificate file as **webserver_cret.pem** and the key file to **webserver_key.pem.** Click **Import** to load both files into the MDR. And the folder structure should be as below:



Ethernet HTTPS Certificate and Key Files USB Drive Folder Figure 133



Configuration File - 1 Figure 135



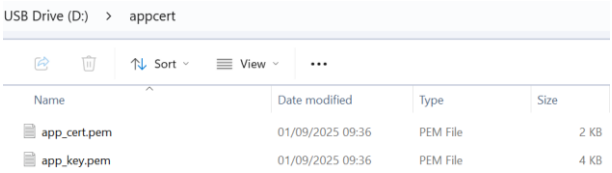
Configuration File - 2 Figure 136

Note: the MDR is equipped with a default HTTPS certificate valid for 10 years. In most cases this operation is not required.

Remove Ethernet HTTPS Certificate and Key is used to remove the existing HTTPS certificate and key in the MDR.

Import SMACON TLS Certificate and Key is used to import a new encryption key and certificate for SmartController communication when the built-in ones have expired.

For importing, place the new key and certificate file in a folder named **appcert** under the root directory of the flash drive. Rename the certificate file as **app_cret.pem** and the key file to **app_key.pem**. Click **Import** to load both files into the MDR. And the folder structure should be as below:



SMACON TLS Certificate and Key Files USB Drive Folder Figure 134

Note: the MDR is equipped with a default TLS certificate valid for 10 years. In most cases this operation is not required.

Remove SMACON TLS Certificate and Key is used to remove the existing TLS certificate and key in the MDR.

5.5.1.2 Network File

Network File Export creates a file that contains all network related settings, such as: server, ethernet, mobile network and Wi-Fi settings. This will be called NETWORK.CONFIG.

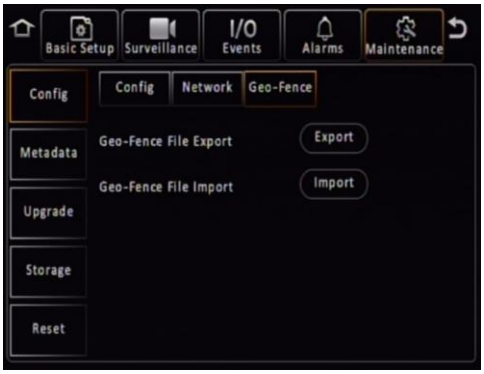
Network File Import is used when you have an existing network file on your flash drive and wish to import network settings to the MDR.

Configuration File Figure 137

5.5.1.3 Geo-Fence File

Geo-Fence File Export creates a file that contains geo-fence parameters. This file will be called GEO-FENCE.CONFIG.

Geo-Fence File Import is used when you have an existing network file on your flash drive and wish to import geo-fence settings to the MDR.



Geo-Fence File Figure 138

5.5.2 Metadata

Information related to recording parameters, alarms and trigger status can be recorded along with speed, location and G-Force data. In addition, data related to the unit itself such as voltage and temperature are recorded and plotted graphically in MDR Software (MDR-Dashboard and MDR-Player). This information is called metadata. Metadata will be saved in the MDR main storage medium for 6 months maximum. After 6 months, the oldest metadata will be overwritten by new ones.

5.5.2.1 Data Export

This area is used to export data to a USB Flash drive.

Data Export Figure 139

All will export all historical data for the chosen file type that the MDR has stored.

Export Time lets you choose a specific period which may be of interest. You can specify the date and time.

File Type allows you to choose the metadata that you would like to export. The options are Snapshots, GPS Data, G-Force Info, Mob Net Dial Log, Alarm Log, Operation Log, Blackbox data and Debug Log Information.

Note: Debug Log is automatically created every day by the MDR for self-check purposes. It can be used for troubleshooting.

The storage location follows the format \"MDR unique serial number"\MDR644\YYYY-MM-DD\log\"log type" and can be read using Notepad™. For e.g. *E:\00D20027FD\2023-06-06\log\userlog.*

5.5.3 Upgrade

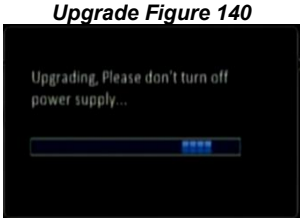
A bus-powered USB hub (minimum of 2 USB ports for USB mouse and USB flash drive) will be required for upgrade procedures.

Upgrade Figure 140

FMW/MCU Upgrade is used to upgrade firmware and MCU (Microcontroller) version. Firmware contains MCU version (combined package) for an easier upgrade. Please check Brigade's website regularly for updates. Upgrades require a USB bus-powered hub. Firmware upgrades take approximately 5 minutes to upload.
Firmware is OSD (on-screen display) related software and directly affects the user interface.
MCU version is software related to MDR hardware functions.

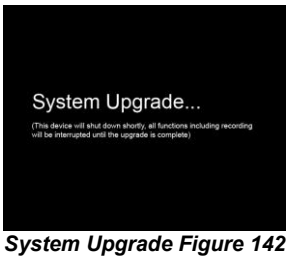
Create a folder named **upgrade** in the root directory of your USB flash drive. Copy firmware files (combined FMW and MCU). Plug the USB flash drive into USB bus-powered hub which is then connected to the front of the MDR. Click upgrade to start the upgrade process, see *Upgrading Progress Figure 141*. After the upgrade, the MDR will restart and display *System Upgrade Figure 142.* Check if the firmware/MCU version has been upgraded successfully by checking system information.

Please note that after



Upgrading Progress Figure 141

Automatic upgrades can also be carried out. To complete this type of upgrade, create a folder named **autoupgrade** in the root directory of your USB flash drive. Plug the USB flash drive into USB bus-powered hub which is then connected to the front of the MDR. The process will begin a few seconds after. Make sure the MDR is on when you plug in the flash drive. If it does see a different firmware, then you will be shown *Autoupgrade Figure 143*. If the firmware version is the same version installed on the MDR then no upgrade will occur.



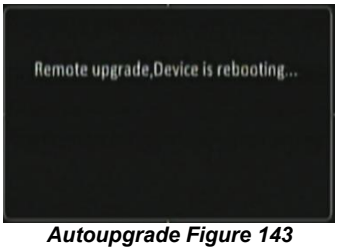
System Upgrade Figure 142

***Warning*: Do not connect an external HDD to the front USB port. Only USB Flash drives (which contain flash memory) is supported by this port. Brigade will not be held responsible for incorrect use of this port.**

***Warning*: Ensure the flash drive is not unplugged from the MDR during this process. Power must be supplied to the MDR without any interruption. Both firmware and MCU upgrades are very sensitive operations, and any power loss may permanently damage the MDR.**

IPC Upgrade refers to IP camera upgrades. Refer to IP Camera Operational Guide.

Hazard Warning Unit Upgrade refers to upgrading the Hazard Warning Unit.



Autoupgrade Figure 143

5.5.4 Storage

Format is used to remove data from the different storage types. It is possible to format **HDD**, **SD (Internal)**, **SD (Fireproof Box)** and **Front USB**. You will be asked to confirm if you would like to format prior to the MDR starting the format process.

To format the fireproof box, click format then choose MDR6. This will format the device into a proprietary format that the MDR can record to.

A USB flash drive that is plugged into the front USB of the MDR can also be formatted to MDR6 or FAT32 format.

***Warning*: Formatting the different storage types will delete all the data from that storage.**

Note: This interface only displays storage mediums which are currently installed or plugged in.

Storage Figure 144

5.5.5 Reset

Factory Settings Restore use this feature to restore the configuration to its default factory settings. Any configuration will be lost, except video recordings and historical data (highest/lowest temperature, mileage etc.).

System Restart is used to force the MDR to restart.

Reset Figure 145

5.5.6 Certificate

All files imported here are for supporting Verify Certificate feature, for detailed functionality, please refer to Chapter 5.1.6.5 Server.

Trusted Root Certificate Users shall obtain the root certificate from a Certificate Authority (CA) and place it in a folder named **cers** in the root directory of the flash drive. Press the **Import** button to load the file into the MDR.

Note: A maximum of hundreds root certificates can be imported. The file name must not exceed 64 characters in length.

Remove ALL Root Certificate is used to remove all the existing root certificates in the MDR.

Certificate Revocation Lists (CRLs) is used to check whether the server's HTTPS certificate has been revoked or is no longer valid. For importing, place the latest CRL files in a folder named **crls** in the root directory of the flash drive. Press the **Import** button to load files into the MDR.

Note: The maximum file size supported for import is 2048KB. The file name must not exceed 64 characters in length.

Remove CRLs is used to remove all the existing CRLs in the MDR.

Certificate Figure 146

6 Record Search

Rec Search allows you to search based on source, type, channel, date, month, year and time.

Source can be selected to retrieve the data. This can be HDD, Sub-stream SD or Main Stream SD. By default, HDD is selected. HDD recording represents higher quality recordings found on the HDD. This is usually set to a better resolution than Sub-stream SD data. Sub-stream represents a lower resolution recording that is found on the SD card (optional). Main Stream SD represents recording the same data as the HDD, which is in high resolution and frame rates. SD data types will contain frame information only.

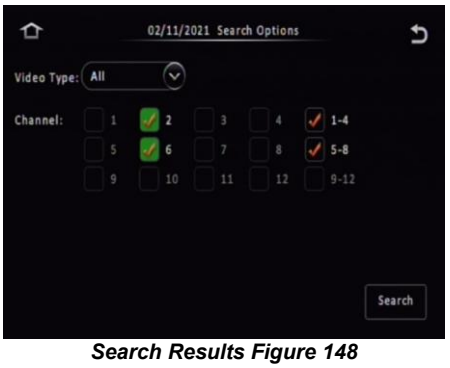
Once you have chosen the date, click **Next**.

Rec Search Figure 147

Now the search results are shown, see *Search Results Figure 148*.
Video type options are All, Normal Alarm or Lock. If you are not certain of the type, choose All.

Channel lets you choose which channel video you would like to view. Each channel will be displayed in full screen.

Once you click **Search** the Video results are displayed. See *Video Results Figure 149*.



Search Results Figure 148

In this window, you will be able to choose a channel and time. Ticked channel boxes will load this data during playback.

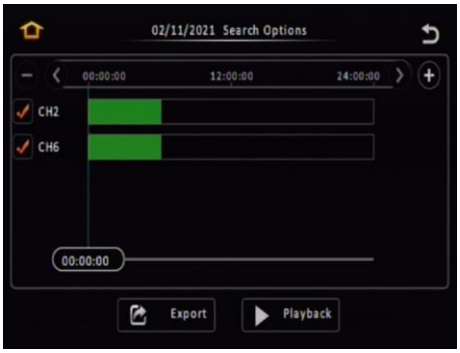
If you click **Playback** it will automatically start playing the first channel displayed when the video data starts for that day.

Note: If playback of a video recording is in a different video format from the current settings (example NTSC or PAL), it cannot be played. Please, switch the video format. You do this by navigating to Setup -> Surveillance -> Record -> General -> Video Format.

You can click on the timeline to a desired time or choose the time using the number pad  . You can move the button  to your chosen time, by clicking and dragging while left clicking.

 is used to navigate earlier or later in that day.

 is used to zoom in and out on the timeline.



Video Results Figure 149

During Playback, the following functions are available:

 Show/Hide Volume menu

 Choose time using number pad

 Volume Increase

 Volume Decrease

 Mute Volume

 Next Channel

 Previous Channel

 Rewind x2 x4 x8 x16

 Play / Pause

 Fast Forward x2 x4 x8 x16

 Slow Forward 1/2 1/4 1/8 1/16

 Step

 Back

Playback Figure 150

Once you click **Export** in *Video Results Figure 149*, then *Start Time Export Figure 151* is displayed.

By default, the timeline for one whole day (24 hours) is displayed. Enter the start time of your export, once you are happy with the time, then click **Start time**. See *Start Time Export Figure 151*.

Enter the end time of your export and click **End time**. See *End Time Export Figure 152*.
The duration and estimated capacity will be displayed. See *Export Estimate Figure 153*.

Once the start and end times are correct, insert a bus-powered USB hub into the MDR front USB. Then connect your mouse and USB Flash drive to this hub and click **Export**.

An export detail window will be shown, see *Export Details Figure 155*. Choose **Proprietary** or **AVI**. Proprietary is secure and contains metadata, it is played using MDR-Dashboard software. AVI is playable on industry media players such as Windows Media Player (WMP).

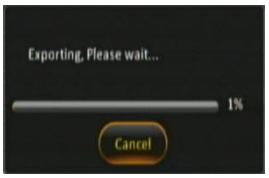
Errors can occur such as no external storage detected or a lack of memory space. If this does, unplug and replug the USB flash drive or insert a larger capacity flash drive. Click **OK**. Exporting progress will be shown in *Exporting Progress Figure 154*.

Start Time Export Figure 151

End Time Export Figure 152

Export Estimate Figure 153

Export Details Figure 155



Exporting Progress Figure 154

7 Log Search

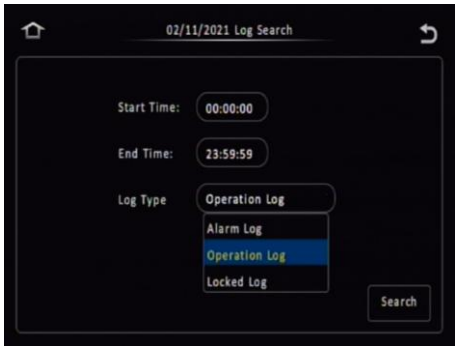
Log Search allows you to search based on type, date, month, year and time.

Click **Next** once you have chosen your required date.

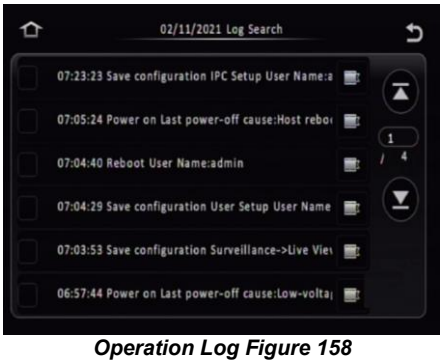
In the next window, enter your **Start Time** and **End Time** of the period.

Log Type can be Alarm, Operation and Locked. Alarm logs contain logs related to Input/output triggers, Panic Button, Speed, G-Force, Video Loss, Motion Detection, Blind Detection, HDD/SD Error and Geo-Fence. Alarm logs can be filtered. Operation logs show all logs related to MDR functions, see *Operation Log Figure 158*. Locked logs show logs related to files that are locked by the user. This is configured by the user.

Log Search Figure 156



Log Details Figure 157



Operation Log Figure 158

8 System Information

8.1 Version Information

Device Name is a pre-populated field to help identify the MDR unit.

Serial Number is a unique identifier for each MDR unit. This information is used to connect a mobile network or Wi-Fi MDR to MDR-Dashboard. This is made up of 10 alphanumeric characters.

MAC Address refers to media access control address which is a unique identifier. This is assigned to network interfaces for communications at the data link layer of a network segment. This consists of 12 alphanumeric characters.

Firmware Version refers to the firmware which contains the OSD menu. The structure starts with MDR series model name.

MCU Version refers to microcontroller firmware which is installed in the MDR unit. This firmware controls all hardware operations. Such as the HDD heater.

Version Information Figure 159

8.2 Modules

8.2.1 Mobile Network

This tab will only show if enabled and configured.

Connection Type shows the connection used to connect to network operators. The options are: GPRS/EDGE, CDMA, EVDO, WCDMA, TDSCDMA, FDD and TDD.

Module Status shows whether the MDR sees the presence of the mobile network module. This will either show module model names or “not detected”.

SIM Status shows whether the MDR sees the presence of a SIM card. The statuses are detected, not detected, available, not available and busy.

Dial Status indicates the SIM’s dial status, which can be dialled up, failed dial up and unknown error.

Signal Level will display the power level of the signal, this will be xxdBm format.

IP Address refers to the IP address obtained by the SIM from the network provider.

IMEI refers to International Mobile Equipment Identity number. This is made up of 15 alphanumeric characters.

IMSI refers to International Mobile Subscriber Identity number. This is made up of 15 alphanumeric characters. This will display the correct number after a sim card is installed.

Mobile Network Figure 160

8.2.2 Wi-Fi

This tab will only show if enabled and configured.

Built-in Wi-Fi Status indicates the current physical state of the internal Wi-Fi module. This can be detected, not detected, connecting, connection failed, connected and obtaining IP address (DHCP).

Signal Level will display the power level of the signal in a visual form  . The more blue bars the better the signal level.

IP Address refers to the IP address obtained by the wireless module.

MAC Address refers to media access control address which is a unique identifier. This is assigned to network interfaces for communications at the data link layer of a network segment. This consists of 12 alphanumeric characters.

SmrtCntrllr Wi-Fi Status indicates the presence of a SmartController dongle. If it connected on the USB port on the MDR front panel, the status would show “Detected”. Available statuses are **Not detected**, **Detected** and **Connected**.

SmrtCntrllr SSID displays the SmartController Wi-Fi name. Users can find this Wi-Fi in their mobile device Wi-Fi list and connect to it.

SmrtCntrllr IP Address refers to the IP address obtained by a SmartController dongle.

SmrtCntrllr MAC Address refers to media access control address, which is a unique identifier, assigned by a SmartController dongle.

For more SmartController features, please refer to the SmartController product manual.

Wi-Fi Figure 161

8.2.3 GPS

GPS Status shows whether the MDR sees the presence of the GPS module. This will say detected or not detected. The MDR 600 series uses an external GPS module which is embedded with antenna together. Therefore, before connecting the GPS antenna, the MDR will display "**No GPS Module**" all the time.

GPS Satellite Count shows how many satellites the GPS module sees, the value can be between 1 and 24.

Speed indicates the current speed of the vehicle, obtained from GPS data.

Note: the metadata (including GPS) is saved in the main storage medium for 180 days.

GPS Figure 162

8.3 Server Status

Centre Server # displays the current server configuration details. A maximum of 6 centre servers can be stored.

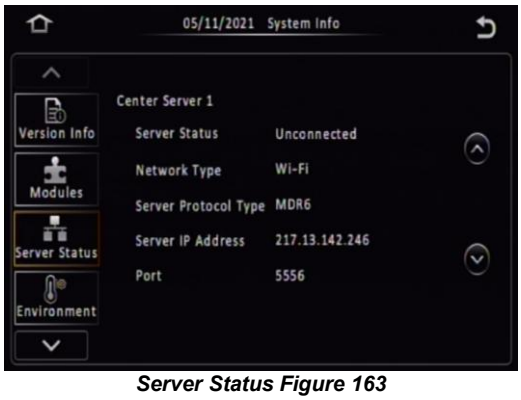
Server Status shows connection state of the chosen server. This can either be connected or unconnected.

Network Type indicates the type of connection interface the centre server will use to attempt to communicate with the MDR Server. There are three options: Ethernet, Wi-Fi and mobile network.

Server protocol type shows the built-in proprietary communication protocol that will be used between the MDR unit and MDR Server.

Server IP Address displays the IP address of the MDR Server. This can either be internal or external IP address.

Port shows the port used for communication between the MDR and MDR server.



Server Status Figure 163

8.4 Environment

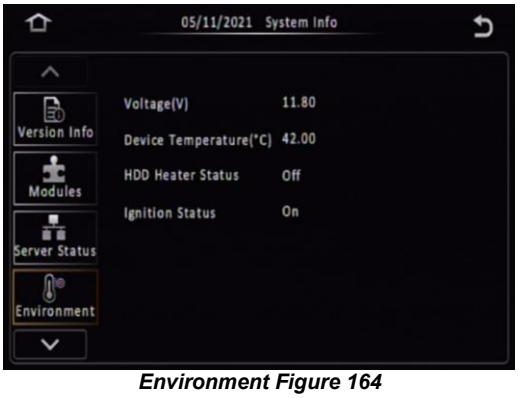
Voltage (V) indicates the current voltage level the MDR is receiving.

Device Temperature (°C) shows the physical temperature of the MDR unit.

HDD Heater Status indicates the current state of the heater. The heater is found on the HDD inside the MCU. The heater turns on automatically once the environment temperature goes down below 10°C and will keep heating to maintain device temperature around 10°C.

Note: The MDR will not record while the MDR is warming up, until it reaches 10 °C and turns on properly.

Ignition Status indicates the current state of the ignition wire – yellow on MDR power cable.



Environment Figure 164

8.5 Storage

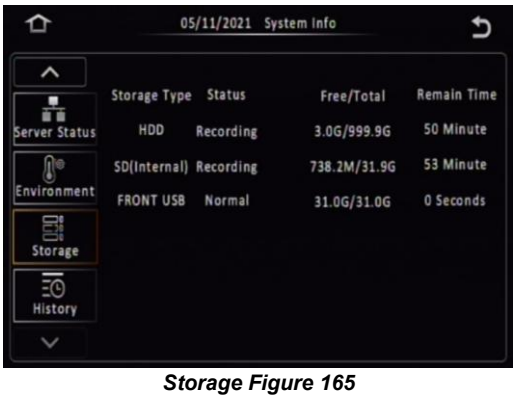
Storage Type refers to the medium of storage. By default, any installed storage medium should be displayed. **FRONT USB** may also be displayed here if a flash drive is connected to the front USB port, found on the docking station.

Warning: **Do not connect an external HDD to the front USB port. Only USB Flash drives (which contain flash memory) is supported by this port. Brigade will not be held responsible for incorrect use of this port.**

Status is an indication of the state of the storage medium. There are three states that can be shown: **Recording**, **Normal** or **Failed**. **Recording** refers to when the medium is currently being recorded on. **Normal** is when the medium is not currently being recorded on, but it has no errors/failures. If a state of **Failed** is displayed, the MDR should be restarted and the storage medium formatted or replaced.

Free/Total shows the capacity of the storage media. In all storage media, once formatted, some space will be lost due to binary math. In general, for each gigabyte, you'll have about 70MB less space.

Remain Time shows the remaining time on each storage media that is currently being recorded on.



Storage Figure 165

8.6 History

Highest Speed is displayed with the relevant date and time.

Total Mileage is an indication of the vehicle's mileage.

Lowest Voltage is displayed with the relevant date and time.

Highest Voltage is displayed with the relevant date and time.

Lowest Temperature is displayed with the relevant date and time.

Highest Temperature is displayed with the relevant date and time.

Highest Information Clean is used to clear all historic information shown on this page.

History Figure 166

8.7 About

Free and Open-Source Software List (FOSS) to display all information of open-source platforms which have been used in MDR firmware.

FOSS Figure 167

9 MDR-Dashboard 6.0

MDR-Dashboard 6.0 software is used for local playback, analysis, clipping, GPS tracking, vehicle information and events/log display. Remote Device and Server playback is possible with mobile network and/or Wi-Fi enabled MDR models. MDR-Dashboard 6.0 has the following features:

- Real-time Preview (Depending on model and only available in conjunction with the MDR server)
- Multi Vehicle Monitoring (Depending on model)
- Playback of Server (Depending on model) and Local Video Data
- Clipping and Downloading Data
- Evidence Management (Depending on model)
- Auto Download Scheduling (Depending on model)
- Basic Data Management
- Alarm Centre (Depending on model)

It allows exporting video clips in three different ways:

- **STANDARD** - proprietary format (readable only by MDR-Dashboard 6.0 and MDR-Player 6.0)
- **EXPORT** - an executable file containing an embedded version of the MDR-Player 6.0
- **MP4** – industry generic video format (without metadata)

Aside from exporting features and event/log display, the MDR-Dashboard 6.0 can read directly from the MCU (Mobile Caddy Unit) or the internal SD card. These features are not available with MDR-Player 6.0.

9.1 PC System Requirements

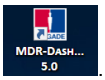
For MDR-644 Series, a USB cable with USB standard type A plug to standard B plug is provided with the MDR which will connect the MCU to the PC. For MDR-641 Series, it requires an ancillary item called MCU Reader to connect the PC with MCU. For more details, please refer to Chapter 2.2.2 MCU Reader. The MDR-Dashboard 6.0 is compatible with Microsoft™ Windows™ 7, 8.x (32-bit or 64-bit version) and 10.x operating systems.

Note: To use the maps feature, an internet connection is required.

MDR-Dashboard 6.0 minimum requirements:

COMPONENT	MINIMUM REQUIREMENTS
CPU	Intel I5-6400 and above (4 Cores / 4 Threads)
Free Hard Disk Drive (HDD) space	4GB
Operating System	Windows 10
Web browser	Internet Explorer 10
Graphics Card	Integrated graphics card
Software	Flash player (up to date)
Resolution	1440x900 (minimum)
RAM	8GB

9.2 Retrieving HDD Data (Quick Guide)

Open the software by right-clicking on the icon 

. Select Run as administrator. This will allow the software to read information from the MCU. The default username: admin and “default password”: LEAVE BLANK. Once users have filled in username (this must be lower case) click OK.

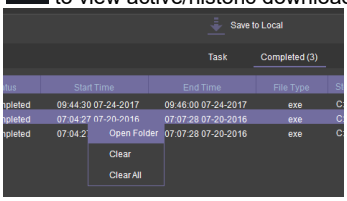
In Local mode you have two playback options, HDD and Directory. HDD - is active when the physical MCU (Mobile Caddy Unit) or SD Card is connected to your local PC.

Double-click the vehicle icon 

. This will display ALL calendar events. Double-click on the relevant calendar date, this will display the pre-playback screen. Click on the CLIP button 
. Only accessible while video is being played or paused. Click on the OK button.

The clip settings window will open. Double check start time and end time. Check the number of channels you want to download. The more channels you choose the bigger the file size.

Choose an option to download your file. Standard is for backing up (for users with the software installed). It clips and creates video files in proprietary format (H264/H265). Export will export the footage into an executable, when playing back you do not need Dashboard software installed. We recommend this option if you are sharing this file with a third party (file must not be larger than 1.5 GB). MP4 files playable by common players such as Windows Media Player (WMP™). Each channel is saved separately, thus unable to view all channels simultaneously. This solution is the portability of the format. The disadvantage is the lack of protection and missing metadata information. Files can be played and edited by anyone. We do not recommend this option as it is not secure. Choose the path where to save your file then click OK.

Click the download button  to view active/historic downloads. The completed tasks automatically move to the Completed tab. Right-click a task and click open folder 

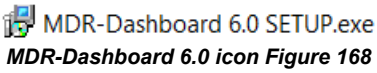
This will automatically open the location of your downloaded data.

9.3 Installing MDR-Dashboard 6.0

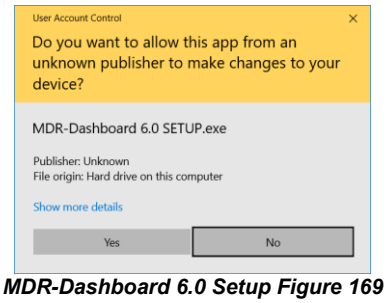
- This operation is performed on the client PC. Right-click the installation file shown in *MDR-Dashboard 6.0 icon Figure* 168 and click run as administrator.
- There may be a security warning pop-up which may be ignored. The software is verified to be virus-free. Click **YES**.
- The setup wizard window will then be displayed. Click NEXT to begin the installation.
- Users can choose preferred language display, refer to *MDR-Dashboard 6.0 Setup Figure 171.* Installation windows will switch to the chosen language after clicking OK.

Note: this only applies for installation windows, not the MDR-Dashboard 6.0 client interface. The MDR-Dashboard 6.0 client language will follow the current computer’s language. If you want to change the client interface, please refer to *System Settings Figure 239.*

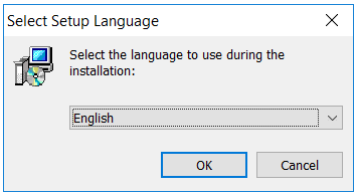
- Users can configure the destination location (if there is not enough free disk space) which is shown in MDR-Dashboard 6.0 Location Figure 172. It is NOT recommended to change the default location.
- Users can then choose if a start menu folder should be created as shown in Start Menu MDR-Dashboard 6.0 Figure 173.



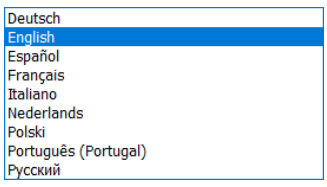
MDR-Dashboard 6.0 icon Figure 168



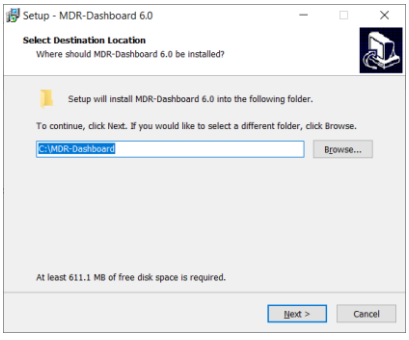
MDR-Dashboard 6.0 Setup Figure 169



MDR-Dashboard 6.0 Setup Figure 170

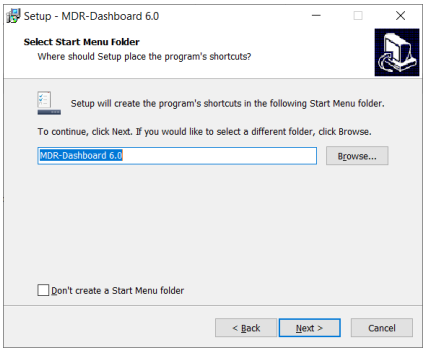


MDR-Dashboard 6.0 Setup Figure 171

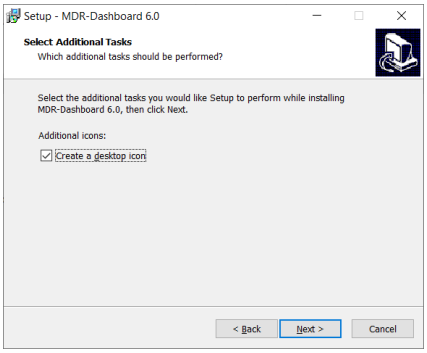


MDR-Dashboard 6.0 Location Figure 172

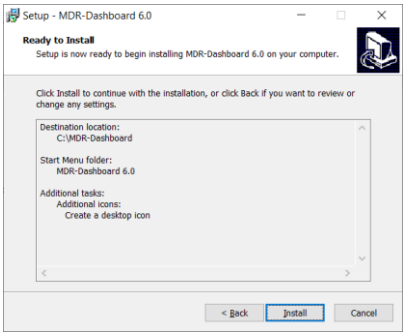
- Referring to Desktop Icon MDR-Dashboard 6.0 Figure 174, users can choose if a desktop icon is created.
- Users are now prompted to click NEXT to begin the installation. This is indicated in MDR-Dashboard 6.0 Installation Figure 175.
- In MDR-Dashboard 6.0 Launch Step Figure 176 depicts the final step, users may choose to launch the software or open an MDR Video Tutorial, provided by Brigade Electronics. Tick the box and click FINISH.



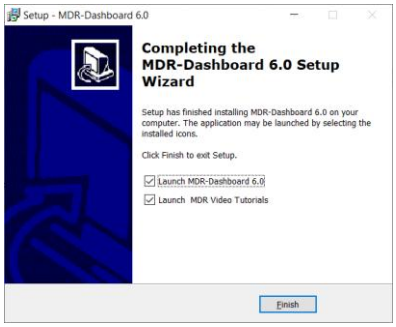
Start Menu MDR-Dashboard 6.0 Figure 173



Desktop Icon MDR-Dashboard 6.0 Figure 174



MDR-Dashboard 6.0 Installation Figure 175

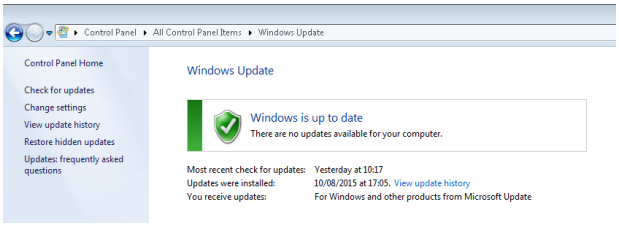


MDR-Dashboard 6.0 Launch Step Figure 176

9.4 Connecting the MCU to the PC

9.4.1 Pre-Connection Procedure (Preferred)

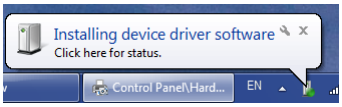
- Users may follow the below procedure if an internet connection is present.
- Run **Windows Update** to have the latest driver database available.
- PC must be up to date with **Windows Update**. Browse to **Control Panel** and then click on **Windows Update** to confirm this. See *Windows Update Figure 177*.



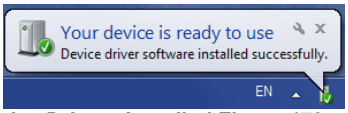
Windows Update Figure 177

9.4.2 MCU Connection Procedure (Required)

- Users must follow the procedure listed below to correctly mount the MCU to their PC.
- Connection method to PC is product specific: for MDR-644 connect the MCU to the PC using the Brigade USB cable provided as an accessory in the MDR-644 kit.
  For MDR-641 connect the MCU to the MCU reader (shown in *Chapter 3.1.3 MDR-641-X-MCU-XXX*) then connect the MCU reader to the PC via the Brigade USB cable provided along with the MCU reader.
  *(The USB cables are different although have the same blue colour).
- Connect the USB-A (data and power) connector to a USB port on the PC. *Installing Device Driver Figure 178* will be displayed.
- Once *Device Drivers Installed Figure 179* is shown the two drivers and device have installed successfully.
- Users may now open MDR-Dashboard 6.0 and the HDD will now appear.



Installing Device Driver Figure 178



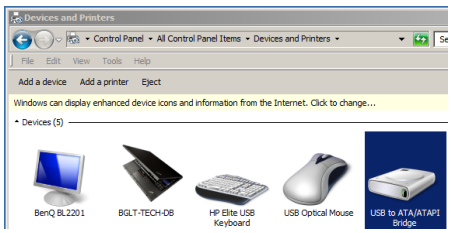
Device Drivers Installed Figure 179

Warning: **Premature removal of the MCU USB-A cable from the PC (during driver installation process) will cause this process to fail. This will cause the HDD to not appear in the MDR-Dashboard 6.0.**

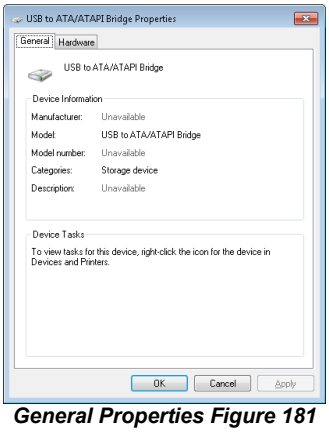
9.4.3 Connection Confirmation

- Open Control Panel.
- Browse to Device and Printers, the device USB to ATA/ATAPI Bridge must be displayed as shown in *Devices and Printers Figure 180*.
- View the drivers associated with this device, right click the USB to ATA/ATAPI Bridge icon and browse to Properties.
- *General Properties Figure 181* will be presented which shows General and Hardware information.
- Two drivers must be listed under Hardware information, one that represents the USB interface and one for the HDD. See *Hardware Properties Figure 182*.

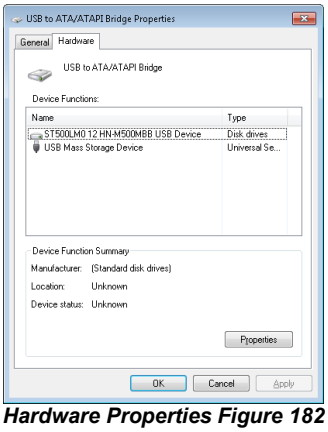
Note: If failure occurs, a manual removal of the drivers and a re-start of the PC is required. Please contact Brigade if support is needed.



Devices and Printers Figure 180



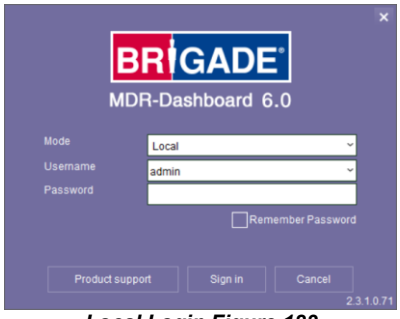
General Properties Figure 181



Hardware Properties Figure 182

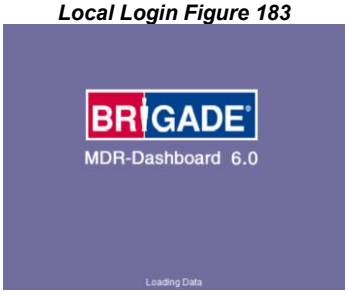
9.5 Loading from HDD/SD

- Right-click the MDR-Dashboard 6.0 shortcut and **RUN AS ADMINISTRATOR**.
- The login screen will be displayed as shown in Local Login Figure 183.
- Default username: admin and there's no password, click Sign in.
- **Product Support** button directs to Brigade Support website, users can find video tutorials.
- The software will display a loading screen as shown in *Loading Screen Figure 184*.



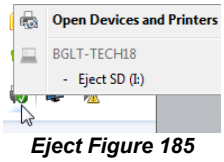
Local Login Figure 183

- This process allows users to load the content of either a connected HDD Caddy (using the USB cable) or a mirror recording from the internal/external SD Card.
- Reading these media storage devices may be slow depending on the amount of data recorded and the speed of the interface.



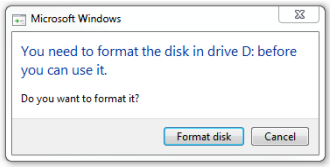
Loading Screen Figure 184

Note: HDD and SD cards are **not** hot pluggable, doing so may damage the HDD/SD card. To safely remove the storage medium, click on the Safe Removal icon at the bottom right of the Windows™ bar (see *Eject Figure 185* and *Cancel Format Disk Figure 186*).
***Warning*: After inserting SD cards into a SD card reader, Windows™ may request to format them as shown below (right). Click Cancel. Formatting SD card will delete the data from the SD card.**

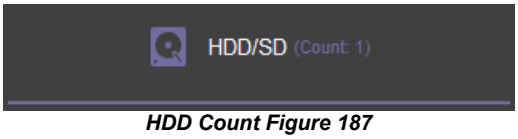


Eject Figure 185

- To retrieve data from the HDD, connect the MCU which contains the HDD to the local PC. If the MCU does not power on, then connect both USB-B cables. If MCU still does not power on, then switch to another USB port.
- Once the MCU has powered on, click the refresh icon  , the vehicle will appear as green to indicate it is available for browsing.
- The number of MCU's connected to the PC will be displayed under **HDD COUNT**. See *HDD Count Figure 187*.

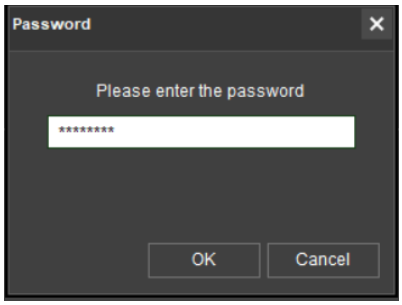


Cancel Format Disk Figure 186



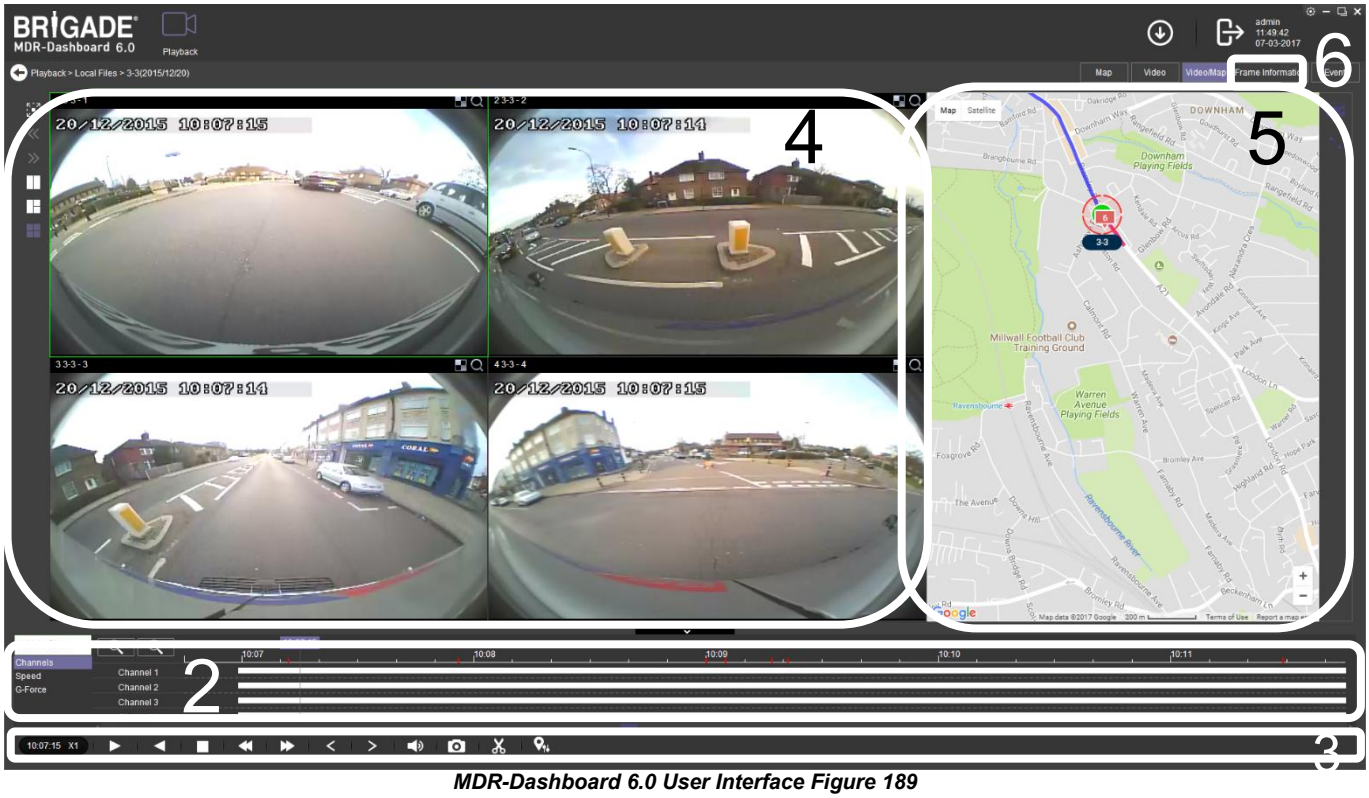
HDD Count Figure 187

Note: If MDR enabled HDD Key feature for either HDD or SD card, when searching for recordings, a window will show up asking for correct HDD Key input, or the search cannot proceed.



HDD Key Window Figure 188

9.6 MDR-Dashboard 6.0 Local Mode

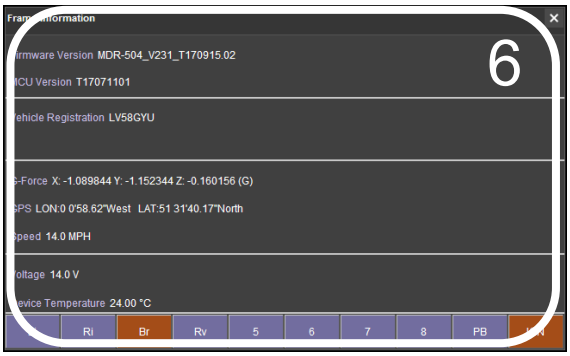


MDR-Dashboard 6.0 User Interface Figure 189

The MDR-Dashboard 6.0 user interface is divided into several numbered areas as illustrated in *MDR-Dashboard 6.0 User Interface Figure 189*:

1. Data Source Access (*Data Source Figure 210*)
2. Graphs Panel
3. Controls Panel
4. Media Playback
5. Map
6. Frame Information

All the above areas are explained in greater detail in the following sections. During playback, users can zoom in/out on the timeline by either using the +/- buttons or the mouse scroll wheel. The vertical blue line can be positioned to the desired time by either dragging it or by clicking on the timeline directly.



Frame Information Figure 190

9.6.1 Channel Info

- Information about resolution, frame rate and streaming bit rate are shown in all the 4 or 8 quadrants – only in full screen view (area 4).
- On the top left of each image, users can see the MDR-Dashboard channel number followed by the company number, vehicle registration and MDR channel number. *Channel Information Figure 191* shows: “4 3-3 - 4”.
- Access full screen mode of a single channel by double-clicking the desired channel. Exit a full screen view by double-clicking again.
- Audio playback is limited to one channel at a time, single-clicking a channel will access the audio feed – a green outer box visually confirms the current audio feed being accessed.
- Each camera channel has two additional features, **BLUR** and **ZOOM**.

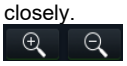
Channel Information Figure 191

- Users can use blur to create a mosaic setting of an area which will be blurred throughout video playback. See *Creating Mosaic for Blur Figure 192*, *Setting the Blur Area Figure 193* and *Blur Activated Figure 194*.
- **BLUR** can be applied to a channel for a clipping of a video segment. Click the delete button to remove a blur from a channel.
- **ZOOM** is used to create a magnified view of a selected area of a camera channel. Click the magnifying glass and then choose the desired box area. This is now the only area that will be visible during playback. To exit this view, double-click the camera channel. See *Choosing Zoom Area Figure 195* and *Zoom area Figure 196*.

Creating Mosaic for Blur Figure 192

Setting the Blur Area Figure 193

Blur Activated Figure 194

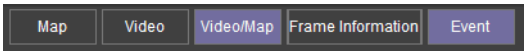
- **ZOOM** cannot be **applied** to a clipping – this feature is for viewing a critical area more closely.
-  is **used** to **ZOOM** in or out of the time scale. Maximum **ZOOM** in is 5 seconds and minimum **ZOOM** out is 24 hours.

Choosing Zoom Area Figure 195

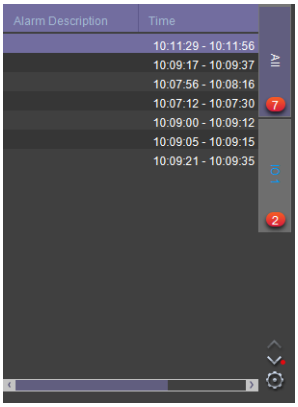
Zoom area Figure 196

9.6.2 Events and Graphs

- Information about events can be viewed by clicking on the **EVENT** button as shown in *Extended View Settings Figure 197*. This will provide a list of all the events.
- Events can also be filtered by clicking on each tab shown in *Event Information Figure 198*. Users may use the arrows to access various tab options. Double-clicking a log in the event list will jump to that point in playback mode.
- OSD settings – the sensor 2-character names are displayed in the event list with brackets. See *Event Information Figure 198*.
- Events can also be ordered based on a user-specific hierarchy. Click on the  (*Event Information Figure 198)* icon to access and change the order. Use the  shown in *Event Hierarchy Figure 199*.

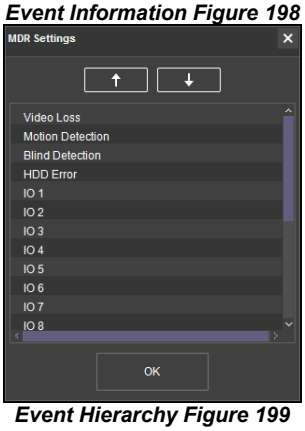


Extended View Settings Figure 197

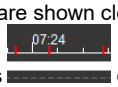


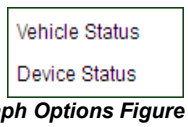
Event Information Figure 198

- See *Event Information Figure 198*. Event information consists of event names, event times and event descriptions (use horizontal scrollbar to view).
- Users can access vehicle information such as
  - ➢ Recorded channel data graph based on time
  - ➢ Speed graph based on time
  - ➢ G-force data graph based on time
- Double-clicking on a graphical point will jump to that time in playback.
- Click the drop-down menu shown in *Graph Options Figure 200* and choose **VEHICLE STATUS**.
- Once the vehicle status sub-menu has been opened as shown in *Vehicle Status Figure 201*, click on the desired option to view the graphical data.

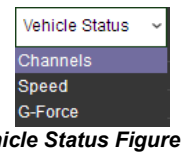


Event Hierarchy Figure 199

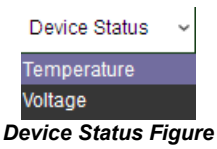
- Events are shown clearly using red vertical markers  on all graphs. Hovering over these markers provides users with additional information; see *Channel Graph Figure 203* for an example.
- White video channel bars represent normal recordings. Orange video channel bars represent alarm recordings.



Graph Options Figure 200



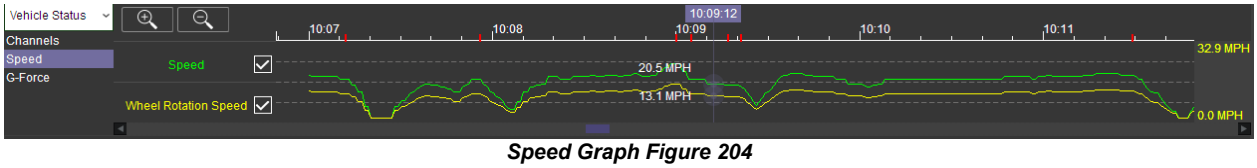
Vehicle Status Figure 201



Device Status Figure 202

Channel Graph Figure 203

- Users can access device information such as:
  - ➢ Device temperature graph based on time – using the built-in temperature sensor
  - ➢ Environment graph based on time – not currently supported
  - ➢ Voltage graph based on time
- Click the drop-down menu shown in *Graph Options Figure 200* and choose **DEVICE STATUS**.
- Once the device status sub-menu has been opened as shown in *Device Status Figure 202*, click on the desired option to view the graphical data.
- Wheel rotation speed is currently unused.

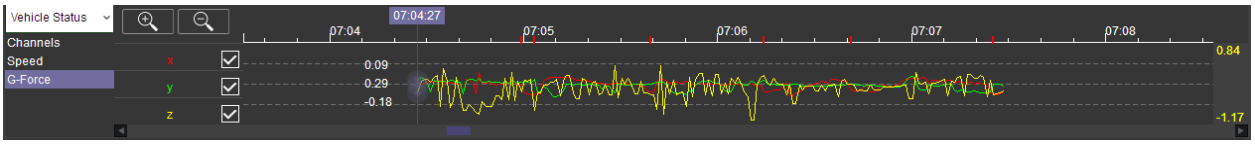


Speed Graph Figure 204

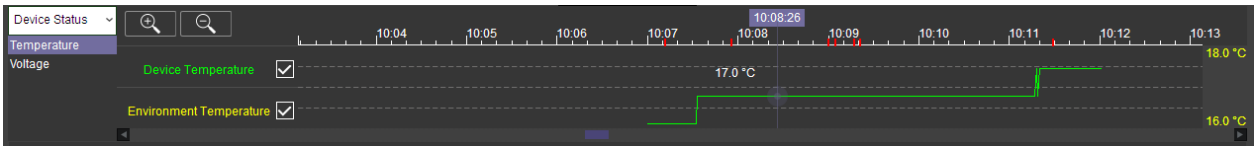
- G-Force is displayed as a triple graph with red, green and yellow lines where each colour represents the X, Y and Z axis respectively.
- 

These tickboxes can be ticked or unticked depending on the desired graphical information.
- 

The highest and lowest peaks of the current graph area are shown to the right of every graph.



G-Force Graph Figure 205



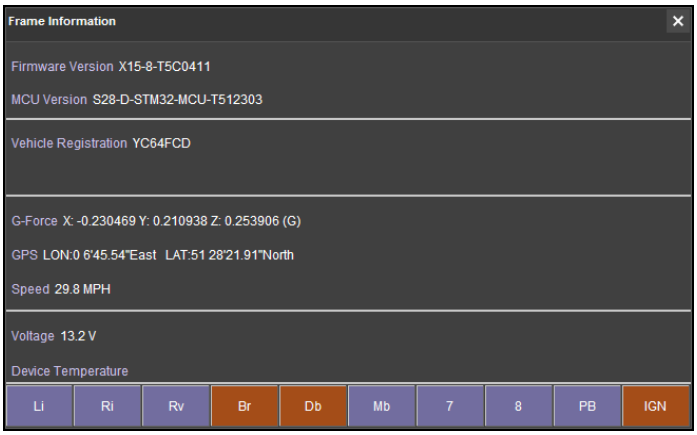
Temperature Graph Figure 206

9.6.3 Frame Information

The Frame Info panel (*Frame Information Figure 207*) provides information about firmware/MCU version, Register Info, vehicle tracking and vehicle information (temperature and voltage).

FRAME INFORMATION consists of:

- Firmware version
- MCU version
- Vehicle Registration
- G-Force
- GPS
- Speed
- Voltage
- Device Temperature



Frame Information Figure 207

9.6.4 Sensor Status

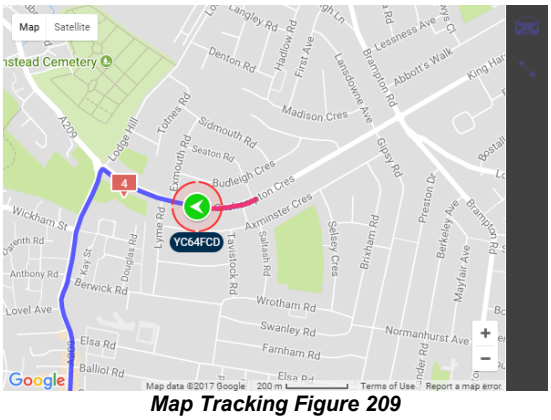
- The 2-character names are set in the OSD menu where users name each sensor. See *IO Trigger Figure 99* for more information.
- MDR-Dashboard 6.0 displays the status of the sensor triggers at the bottom of the Frame Info (area 6). *Sensor Status Figure 208* shows the ignition (IGN) and the sensor input named Br (Brake) triggered.
- PB (Panic button) and IGN (Ignition) are not configurable.
- By default, your MDR has been set up to show Li (Left Indicator), Ri (Right Indicator), Rv (Reverse camera) and BR (Brake) sensors in the Frame Information.

Sensor Status Figure 208

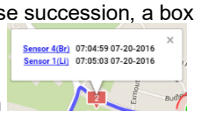
9.6.5 Map Tracking

The map (area 5) refreshes the position of the vehicle continuously during playback and displays the vehicle registration. Zooming in and out on the map can be done using the +/- buttons.

- There are two map view settings that can be turned on/off:
- Lock map to vehicle automatically
- Show Line/Hide Line



Map Tracking Figure 209

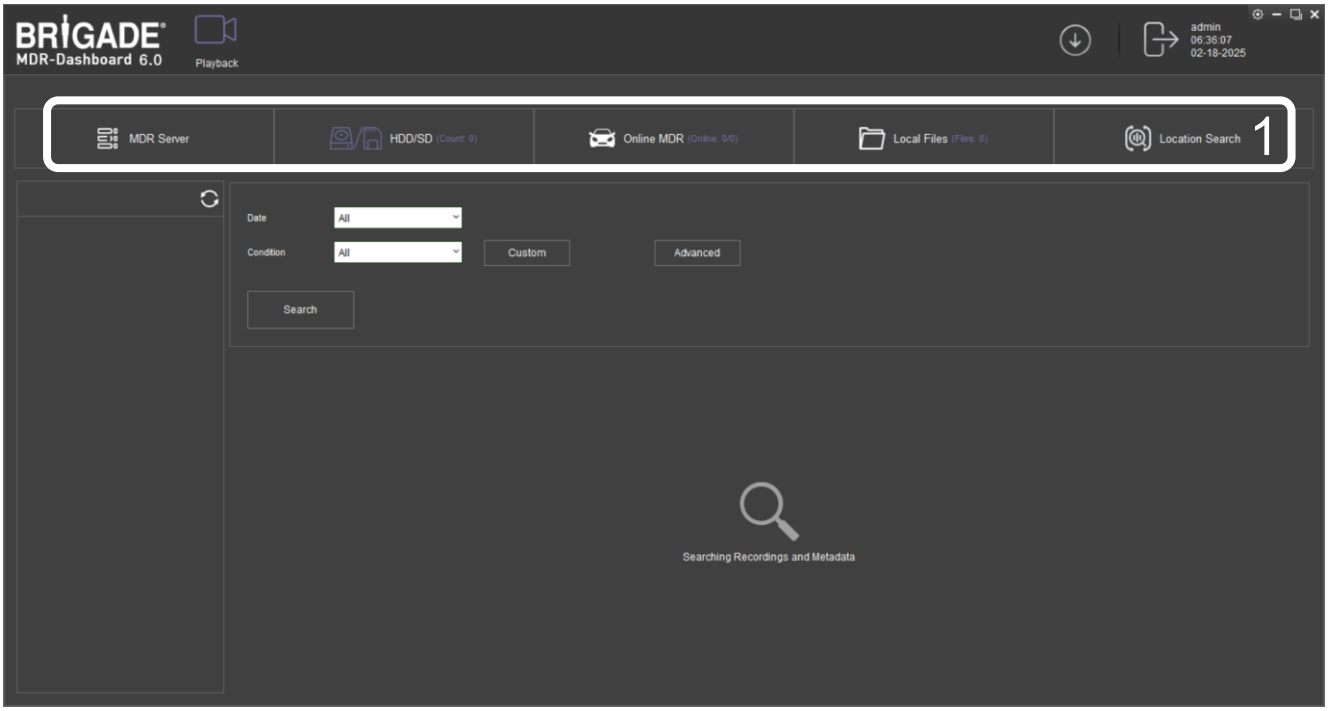
- Click the Lock Map button  to ensure that the vehicle is always shown in the centre of the map. If this is turned off, then the map can move freely regardless of the vehicle position.
- Click the Line button  which will turn the vehicle route track line on or off depending on this setting. It is advised to have this turned on.
- The red trace indicates the route that has been travelled while the blue represents the route the vehicle will travel. Google Maps Satellite View is also supported.
- A hazard symbol  on the map will show points where an alarm was triggered. If there are multiple alarms in close succession, a box indicating the number of alarms will be shown on the map  . Click on these icons to access additional information  about the alarm.
- Video playback will move to the event point if this is clicked on.

Note: As an alternative, MS Bing maps can be chosen. Changing maps requires restarting the MDR-Player 6.0 which will be requested once the setting has been changed.

9.7 Loading from a USB flash drive or Folder

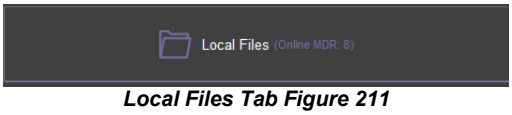
This procedure applies to recordings previously downloaded from the MDR and saved onto a USB flash drive or saved onto a PC.

- To read exported files, click on the Local Files tab found on the Data Source Access (area 1). See *Data Source Figure 210*.

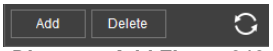


Data Source Figure 210

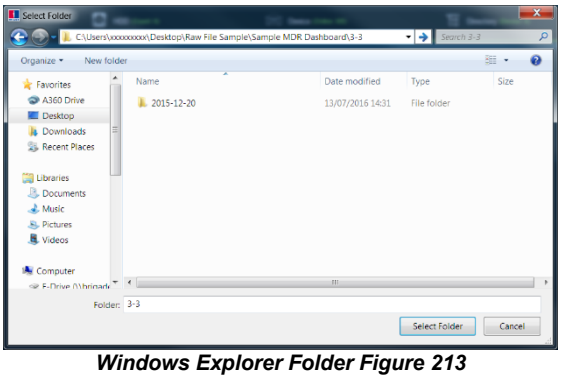
- Users click on the **Local file** tab as shown in *Local Files Tab Figure* 211.
- Click the **ADD** button as shown in *Directory Add Figure 212*. Browse to the relevant folder and click **SELECT FOLDER**.
- This brings up a Windows™ Explorer dialogue box (*Windows Explorer Folder Figure 213*) which allows users to select the folder that contains the recordings. Select the MDR Vehicle name, in this example 3-3.
- Once the folder has been successfully loaded, it will appear as shown in *Clipping Directory Figure 214*.
- If there was a directory specified previously, click the refresh icon  to get the directory to appear. This will be a green icon to indicate it is available for browsing.
- Double-click the vehicle icon. This will display **ALL** calendar events. A typical example of a calendar is shown in HDD Calendar Figure 218.
- The directory will now appear in the left pane as shown in Clipping Directory Figure 214.
- Multiple directories can be specified. Directories may be searched. See Directory Search Figure 215. Custom and Advanced searches can be configured. See Windows Explorer Folder Figure 213 and *Advanced Search Settings Figure 217*.



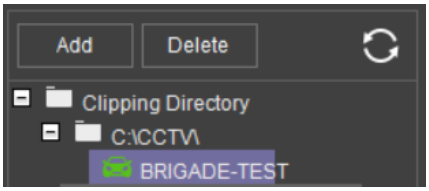
Local Files Tab Figure 211



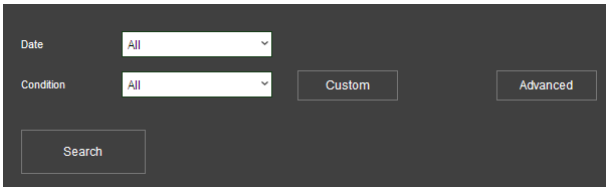
Directory Add Figure 212



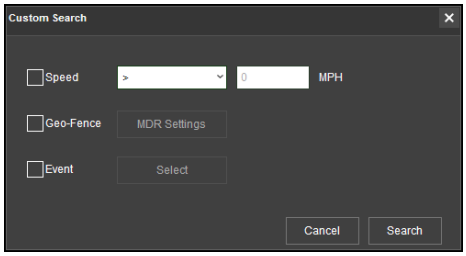
Windows Explorer Folder Figure 213



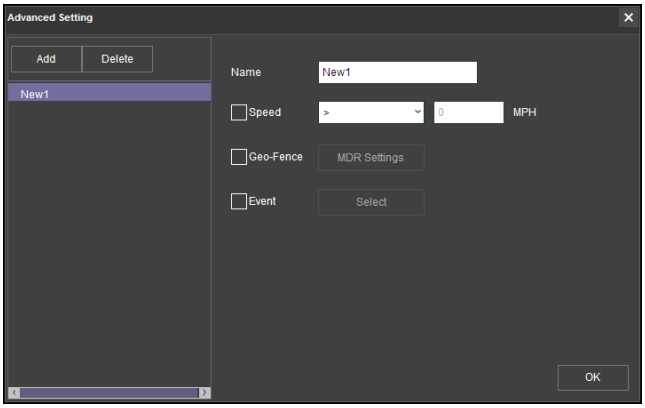
Clipping Directory Figure 214



Directory Search Figure 215



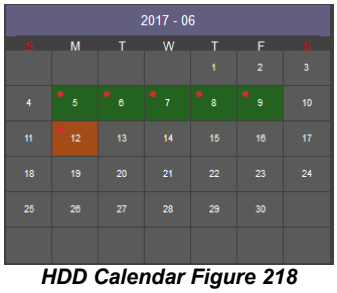
Custom Search Figure 216



Advanced Search Settings Figure 217

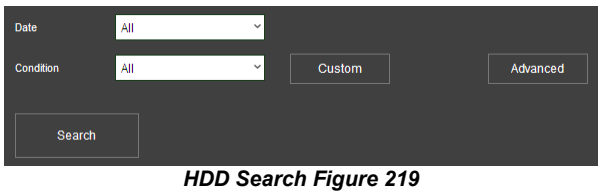
9.8 Reading Data

- Double-click the vehicle icon  . This will display ALL calendar events.
- Each colour represents:
  - ➢ Green dates represent normal recordings
  - ➢ Orange dates represent alarm recordings
  - ➢ Red dots represent metadata data
  - ➢ Blue outline represents the current date (today's date)
- Metadata is treated as separate data sets, store 30 recording days maximum (work on calendar dates)
- A typical example of a calendar is shown in *HDD Calendar Figure 218*.

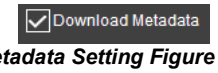


HDD Calendar Figure 218

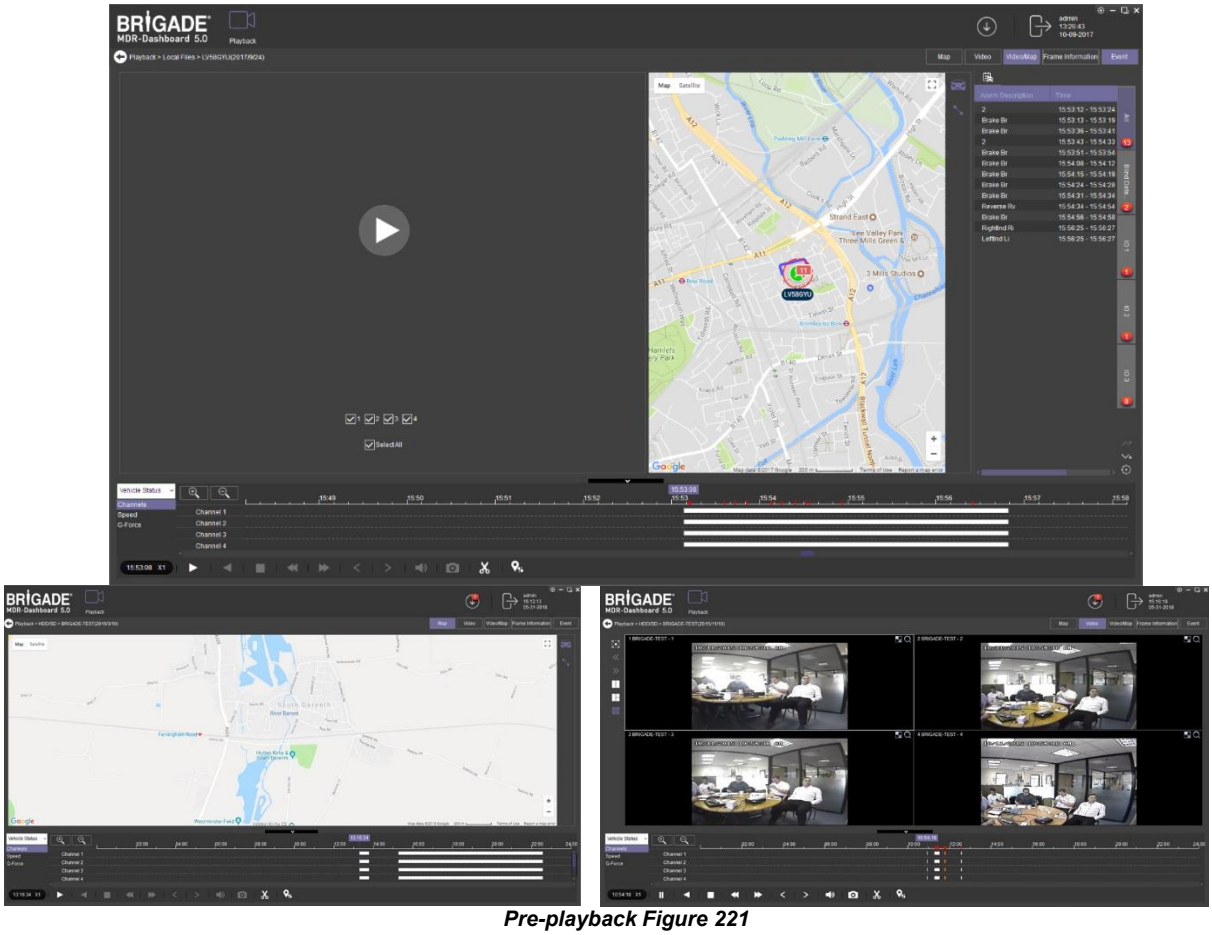
- To refine the data displayed, users should setup the search criteria. Custom and Advanced searches can be created. *HDD Search Figure 219*.
- Ensure that the **DOWNLOAD METADATA** is always ticked. See *Metadata Setting Figure 220*. This will ensure that all metadata (graphical) is shown with playback video.
- Users double-click on the relevant calendar date. This will then display the pre-playback screen. See *Pre-playback Figure 221*. Users can choose which channels to view during playback.



HDD Search Figure 219



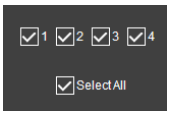
Metadata Setting Figure 220



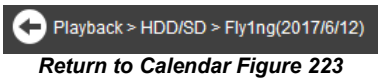
Pre-playback Figure 221

- Users can access different view settings such as, **MAP**, **VIDEO** and **VIDEO/MAP**. See View Options Figure 222.
- Frame information and Event information can also be accessed from this panel. To return to the calendar view from the current playback, click the back arrow . See Return to Calendar Figure 223.

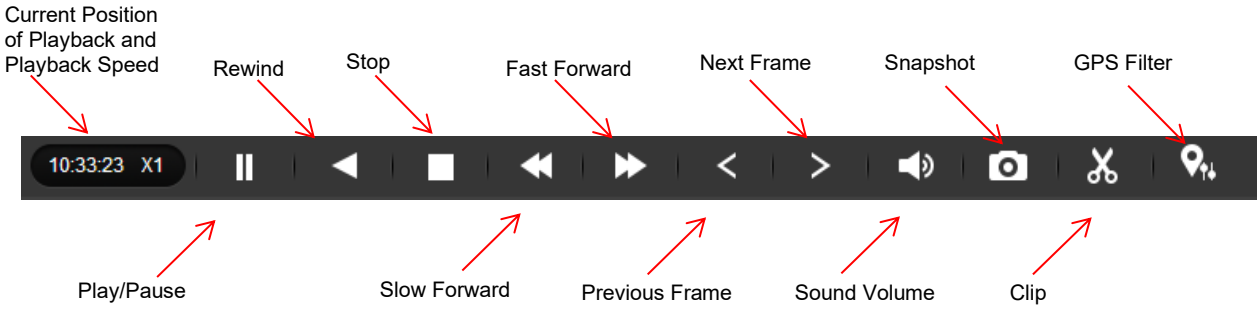
View Options Figure 222



- Choose which channels to playback.
- Click the Play button to display the data.



Return to Calendar Figure 223



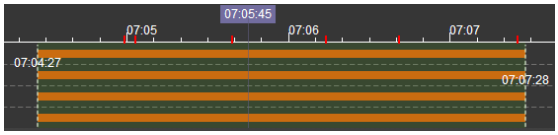
MDR-Dashboard 6.0 Controls Panel Figure 224

- **Fast Forward** options (1x, 2x, 4x, 8x, 16x, 32x). Maximum **Slow Forward** options are 1/2, 1/4, 1/8, 1/16 and 1/32.
- Double-clicking an individual channel will make it full screen. There are other video viewing options as shown in *Video View Options Figure 225*. This is dependent on model (4 channels or 8 channels).
  - Full Screen
  - Previous Page
  - Next Page
  - Three Windows
  - Four Windows
  - Six Windows
  - 9 Windows

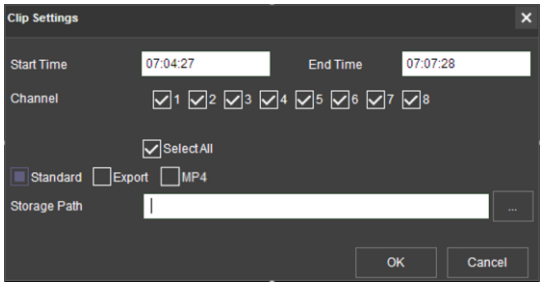
Video View Options Figure 225

9.9 Exporting Videos

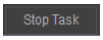
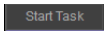
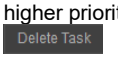
- Click on the **CLIP** button  . Only accessible while video is being played or paused.
- Green clip markers appear (broken vertical lines). See *Clipping a Video Figure 226*.
- Select the start and end time for the clip by dragging and dropping to the desired time, users may also make fine adjustments to the times by typing. See *Clip Settings Figure 227*.
- Once satisfied click on the **OK** button 
- The following window will appear to choose the channels, clipping time (when unhappy with the markers) and the kind of exporting function. There are three types of exporting:
  - Standard
  - Export
  - MP4
- The **STANDARD** option cuts the clip and creates a folder structure containing the video files in original proprietary format (H.264 / H.265) onto a local storage device (e.g. HDD).
- All footage needs to be saved in a named folder within C: Drive.
- Note: Users are not allowed to use the same location as the original folder. Once clipped, the files will be found in a folder named with the following format: *\Company_Name-Vehicle_Number\YYYY-MM-DD\record*

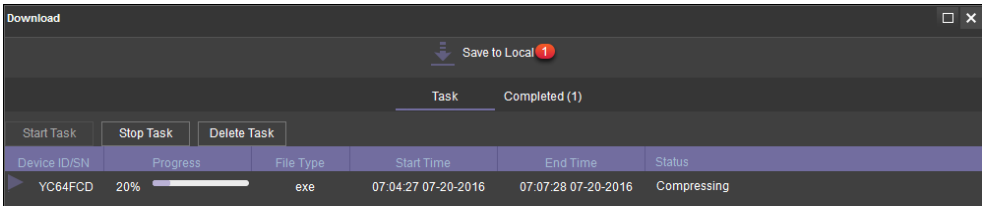


Clipping a Video Figure 226



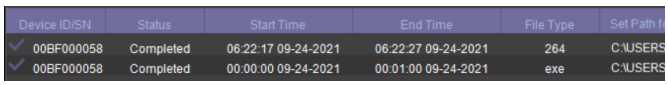
Clip Settings Figure 227

- The **EXPORT** option allows users to export clips into a single .exe file with an embedded MDR-Player 6.0. This option is the recommended solution as it contains metadata and the Clip. It is recommended that this be password protected and played without the need of any additional player software. If a password is not created, the file will not be accessible. ***Maximum size of the file is 1GB to 1.5GB depending on system.***
- The **MP4** option creates .MP4 files playable by common players such as Windows Media Player (WMP™) and Video Lan Client (VLC). The advantages of this solution are the portability of the format. The disadvantage is the lack of protection and missing metadata. These files can be played and edited by anyone. The only information contained in the video image is selected by the OSD options.
- Users may monitor the progress of current/completed download tasks in the downloads area. Click the  button.
- See *Current Download Tasks Figure 228*. Task priority is a first come first serve basis. If another task has a higher priority, use  to stop a task and the  to start the priority task. If an error is made, tasks made be deleted using the 

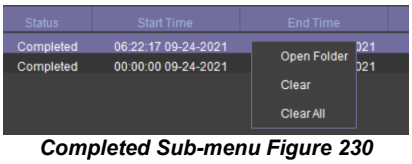


Current Download Tasks Figure 228

- Completed tasks automatically move to the Completed tab, see *Completed Download Tasks Figure 229*.
- Right-click a completed task to access a sub-menu as shown in *Completed Sub-menu Figure 230*.

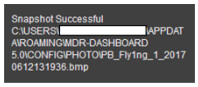


Completed Download Tasks Figure 229

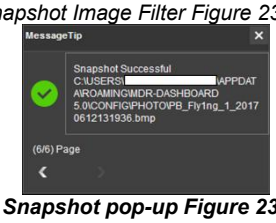


Completed Sub-menu Figure 230

9.10 Saving Snapshots

- Click the desired channel; this will be highlighted by a green outline.
- Click on the Snapshot button  in the Controls Panel.
- A pop-up window will be displayed on the bottom right corner of the desktop (next to the time/calendar). The snapshot location is also shown here (See *Snapshot pop-up Figure 231*).
- Click on the Snapshot Successful information 

to access the **IMAGE FILTER**, this shows all historic locally stored snapshots. See *Snapshot Image Filter Figure 232*.

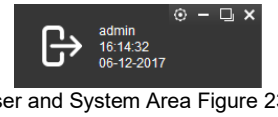


Snapshot pop-up Figure 231

Snapshot Image Filter Figure 232

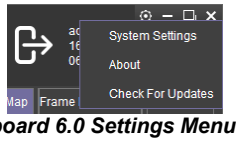
9.11 User and System settings

- The current logged in username, date (Client PC) and time (Client PC) is displayed. See *User and System Area Figure 233*.



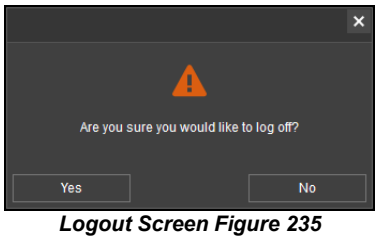
User and System Area Figure 233

- This area is used to logout. This is achieved by clicking on the logout icon  . This brings up a confirmation window for logging out. Click **YES** or **NO** and thereafter the MDR-Dashboard 6.0 login screen will be displayed. See *Logout Screen Figure 235*.

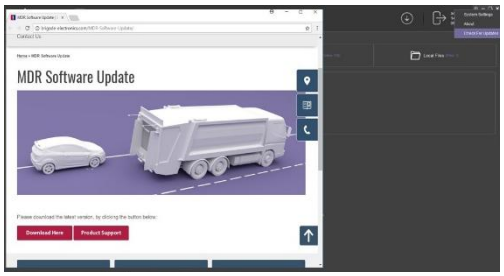


MDR-Dashboard 6.0 Settings Menu Figure 234

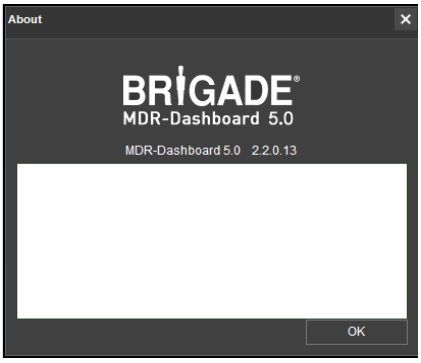
- Click on the gear icon  to display a submenu containing **SYSTEM SETTINGS** and **ABOUT** options. See *MDR-Dashboard 6.0 Settings Menu Figure* 234.
- The **ABOUT** option will display the window shown in *About Figure 236*. This will show the current MDR-Dashboard 6.0 version.
- The **Check for Updates** option will take the user to the brigade website where relevant updates can be downloaded.



Logout Screen Figure 235



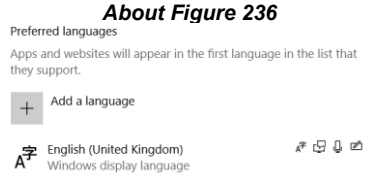
Check for Updates Figure 192a



About Figure 236

- Refer to the **SYSTEM** window in System Settings Figure 239. This area is used to configure the following:
  - ➢ Path for Snapshots
  - ➢ Map Type – Google map or OS Map, local mode default set to OS Map
  - ➢ Language – English, Spanish, Russian, Portuguese, Polish, Italian, German, French, Dutch available

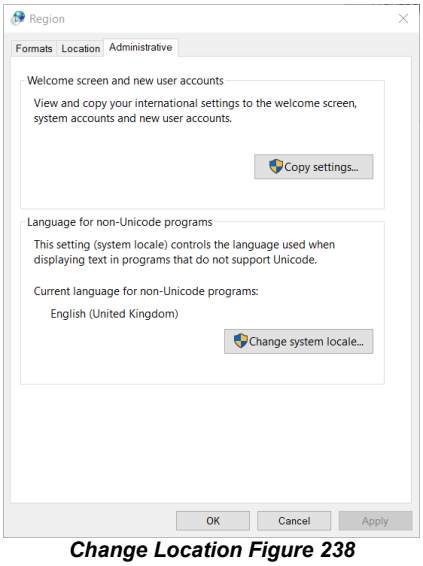
  Note: If the language can't be displayed properly, please follow steps below for troubleshooting:
    - Install Windows language pack
      Go to Windows Settings-> Time & language-> Region & language->Add a language-> Install the language you want to display
    - Change location
      Go to Control Panel-> Clock and Region-> Region-> Administrative ->Change system locale-> Change to the country/location which speaks the language.
  - ➢ Speed Unit
  - ➢ Temperature Unit
  - ➢ Automatically switches to the main stream – Unused
  - ➢ Loop Playback Video – this will play the entire selected video on repeat. This feature can be used for HDD or directory playback
  - ➢ Auto-logout – Automatically logout the MDR-Dashboard 6.0 client after certain amount of time.



Install Language Pack Figure 237

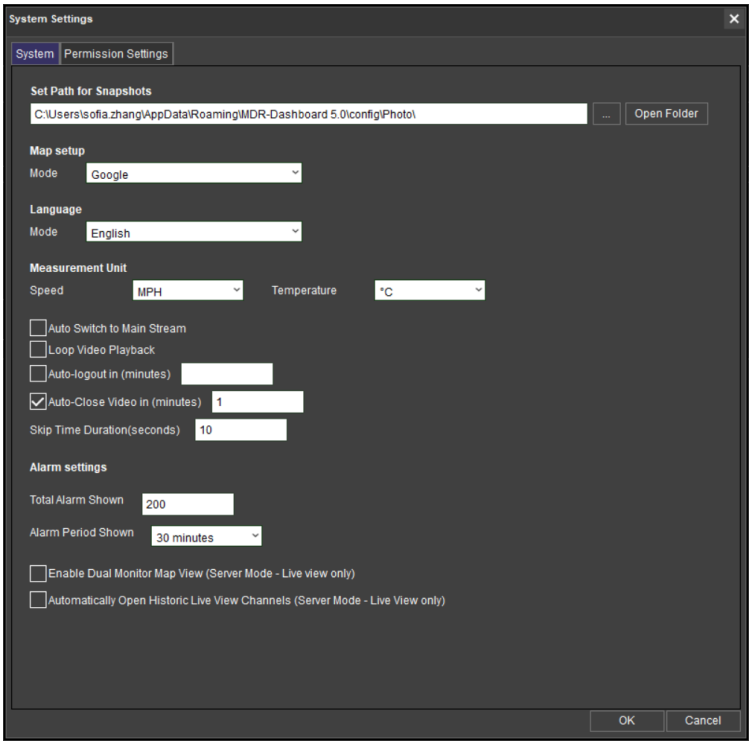
- Auto-Close Video – Automatically stop liveview after a certain amount of time, considering saving data usage and avoids people accidentally leaving the liveview on.
- Skip Time Duration(seconds) – defines time skip duration when playing back local files. User can use keyboard left and right keys to forward or reverse the time stamp whilst playing. The default amount is 10.
- Alarm Settings Count (Server mode only) – shows the historical alarm and events in the alarm log area. The default amount is 200.
- Alarm Settings Time (Server mode only) – shows the alarm and events for the past time range setting in the alarm log area. The default amount is 30 minutes.

Note: Because Russian uses different characters from other languages, if you want to change the software to Russian, please download the Russian language pack from Windows first.

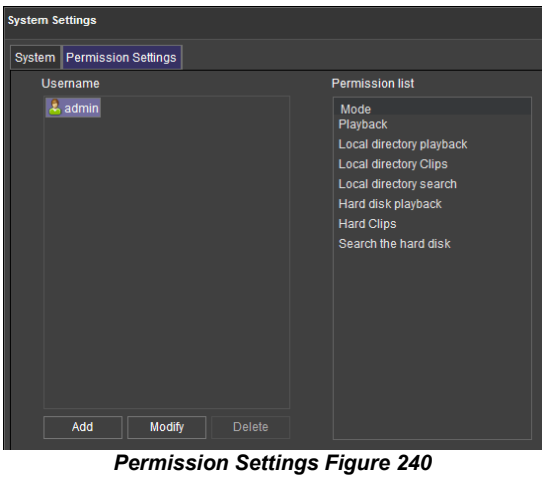


Change Location Figure 238

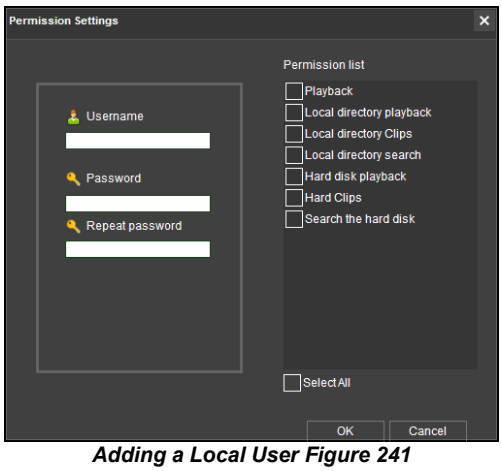
- System Settings is comprised of 2 windows – **System** and **Permission** Settings. System Settings are shown in System Settings Figure 239
- See the **PERMISSION SETTINGS** window shown in *Permission Settings Figure 240*. This area is used to setup local user logins.
- Only the **ADMIN** account can create new local user accounts.
- Any local user accounts are for users that will login using the **SAME PC** but require different levels of access.
- These accounts can be assigned passwords. This is also where the permissions for each local user are set. Passwords should be noted down by each user.



System Settings Figure 239



Permission Settings Figure 240



Adding a Local User Figure 241

10 MDR-Player 6.0

MDR-Player 6.0 is like the MDR-Dashboard 6.0 visually and in operation. MDR-Player 6.0 is used mainly to playback executable video files (.exe). The system is compatible with a PC running Microsoft Windows™ 7, 8.x (32-bit or 64-bit version) and 10 operating systems. To understand the key feature differences between the software, please see the Table below:

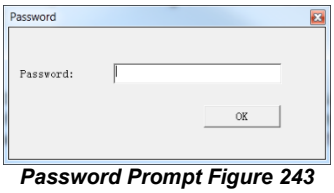
MDR-Dashboard 6.0 vs MDR-Player 6.0

MDR-DASHBOARD 6.0	MDR-PLAYER 6.0
Installation Required	Direct Executable File
Playback Sources – Server HDD, Local HDD, Local SD Evidence, Remote Device and Directory Playback (Clippings)	Playback Sources – Exported files (password protected .exe) and Directory Playback (Clippings)
Live Mode, Playback Mode and Evidence Mode	Playback Mode
View, Clip and Export Recordings	View Recordings
Choice of Snapshot	Individual Snapshot
View Events and Logs	No option to view events and logs
Channel Blur and Zoom	No Channel Blur and Zoom

10.1 Exported MDR-Player 6.0

- The embedded MDR-Player 6.0 is a single executable file that can be password protected (user choice) which is generated by the MDR-Dashboard 6.0.
- The file contains an exported clip with the MDR-Player 6.0. By double-clicking on the .exe file, the MDR-Player 6.0 is launched and automatically displays the recordings with metadata. See *Exported MDR Icon Figure 242* and *Password Prompt Figure 243*.

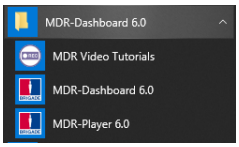
Exported MDR Icon Figure 242



Password Prompt Figure 243

10.2 Setting up MDR-Player 6.0

- MDR-Player 6.0 does not require any installation. If you have already installed MDR Dashboard 6.0, MDR-Player 6.0 can be accessed in the start-up menu or via a shortcut found on the desktop.
- See *MDR-Player 6.0 Icon Figure 244*. Double click on the Brigade logo named MDR-Player 6.0 to start the program.



MDR-Player 6.0 Icon Figure 244

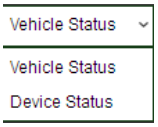
10.3 Basic Operations

MDR-Player 6.0 allows three ways of loading the data:

- From a clip with embedded MDR-Player 6.0 (as explained in section 10.1)
- Opening a file

Users may access the following information using the dropdown menu. See *Vehicle Status Figure 245*:

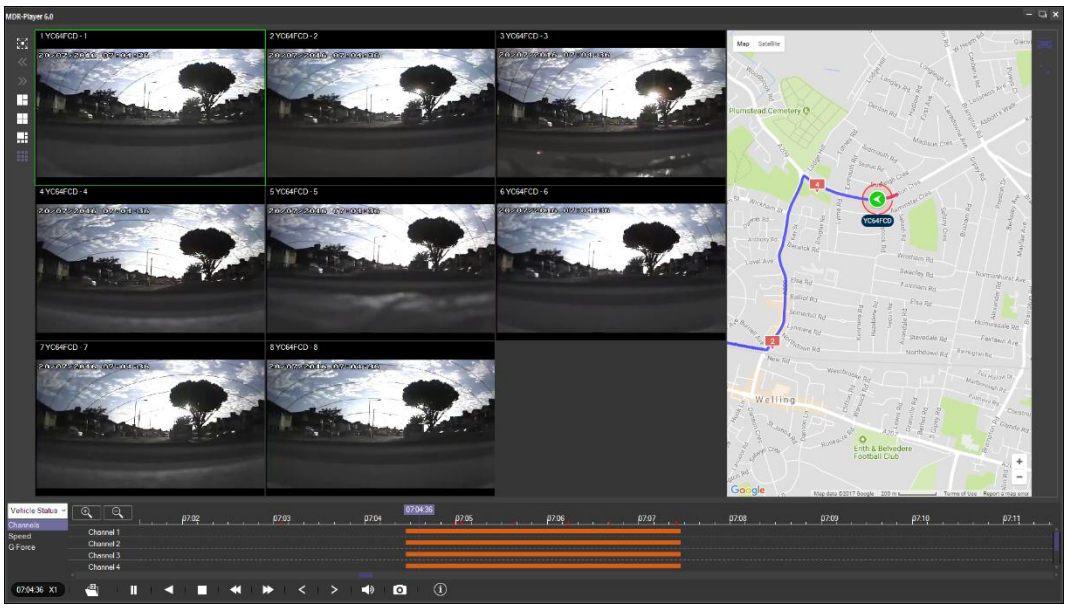
- Channel
- Speed
- G-Force
- Temperature
- Voltage



Vehicle Status Figure 245

The following interface will appear as shown below. *MDR-Player 6.0 Figure 246* illustrates a multiple camera view, a timeline with control buttons and a Google Maps view.

Note: To use the maps feature, an internet connection is required.

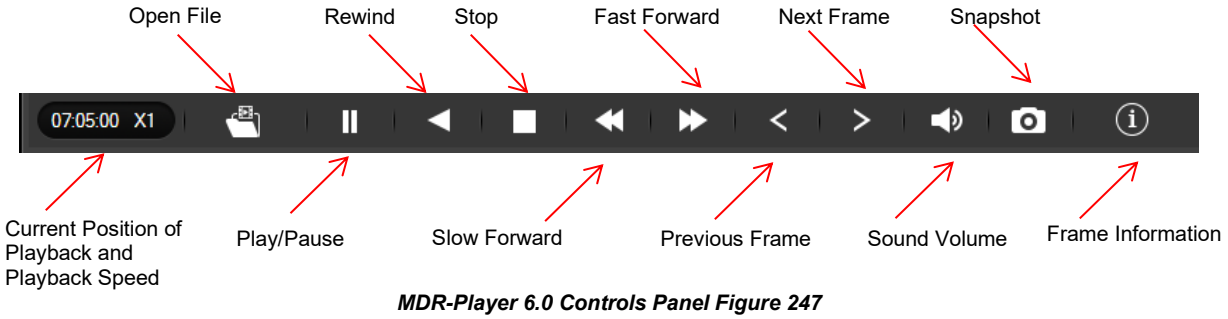


MDR-Player 6.0 Figure 246

The toolbar *(MDR-Player 6.0 Controls Panel Figure 247)* has the following options:

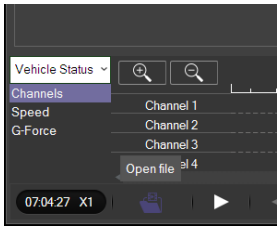
- Open File

- Pause
- Rewind
- Stop
- Slow Forward (x1/2 or x1/4)
- Fast Forward (x2 or x4)
- Previous Frame
- Next Frame
- Sound
- Snapshot – takes a screenshot of the selected channel which is stored in C:\Users\<*username*>\AppData\Roaming\MDR-Player 6.0\Temp
- Frame Information



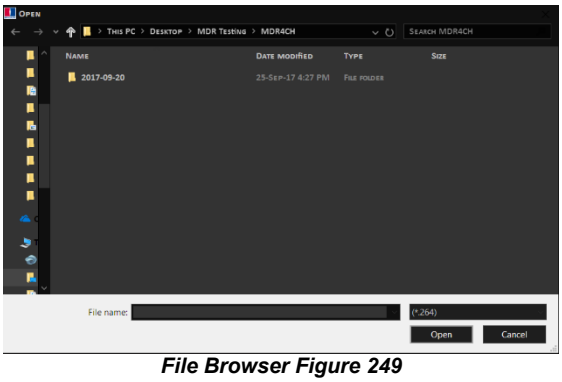
MDR-Player 6.0 Controls Panel Figure 247

To access local clippings (H.264) click the **OPEN FILE** icon. Selecting **Open File** (*Open File Figure 248*), a Windows™ Explorer browsing dialogue is displayed. Navigate to the folder where the **.h264 native files** are. If users select the file for one single channel, MDR-Player 6.0 will automatically load the other channels (if present) corresponding to the same time frame.



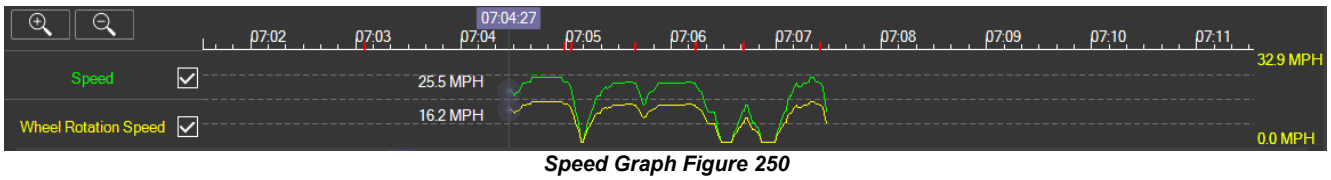
Open File Figure 248

Clippings (H.264 files) created with previous version MDR-Dashboard 1.0 can only be played with MDR-Player 1.0. Clippings created with MDR-Dashboard 6.0 can only be played using MDR-Player 6.0.
Selecting **Open File** requires users to browse and select a **folder by date** as illustrated (*File Browser Figure 249*).

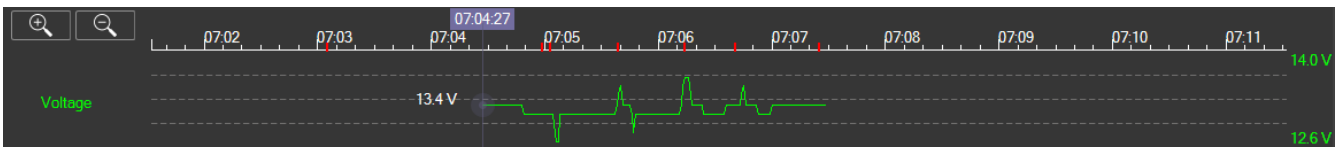


File Browser Figure 249

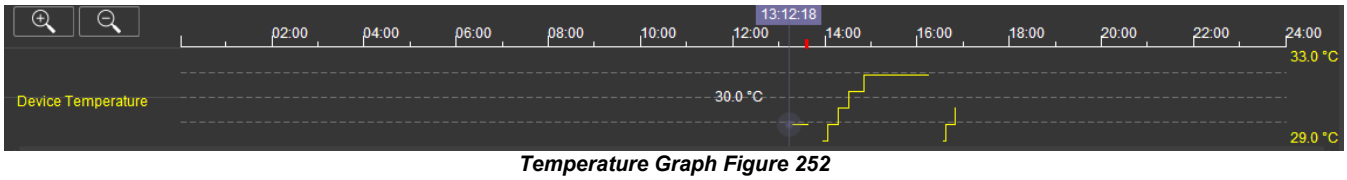
Once the data has loaded, users can play the videos. Double clicking on a single channel image would trigger this channel into full screen. Audio playback from channel 1 is played when multiple channels are displayed. Users can select a different audio source by single clicking another channel image.
During playback, users can zoom in/out on the timeline by either using the +/- button or by using the mouse scroll wheel.



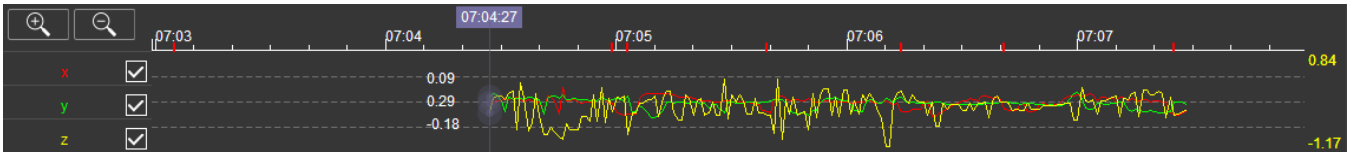
Speed Graph Figure 250



Voltage Graph Figure 251

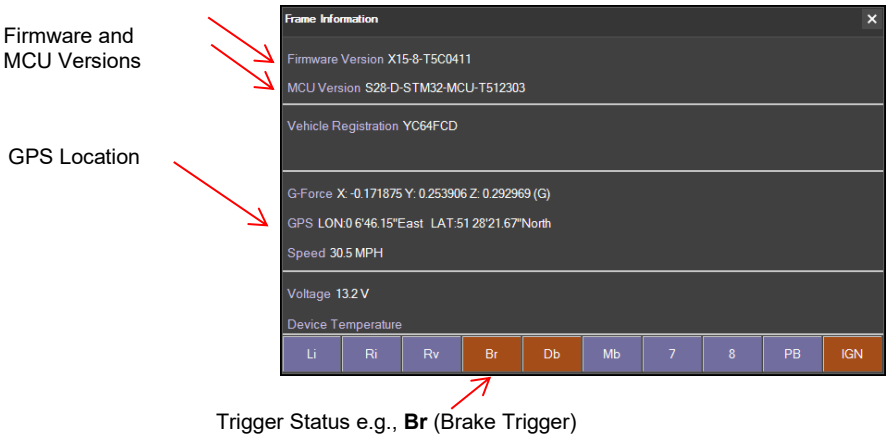


Temperature Graph Figure 252



G-Force Graph Figure 253

Use the  icon to access frame information. Information such as sensor trigger status, GPS location, Firmware/MCU and video recording parameters are displayed (*Frame Information Figure 161*).



Frame Information Figure 254

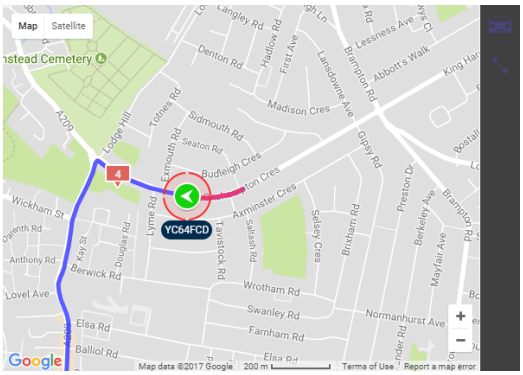
In the maps (below) tracking information refreshes continuously while playing and displays the vehicle registration. Zooming in and out on the map can be done using the +/- buttons; or by using the mouse scroll wheel.

Note: The Hand tool allows users to move the map, but the image is periodically refreshed to keep the vehicle in the centre of the map.
The red trace indicates the route that has been travelled while the blue represents the route ahead.
Google Maps Satellite is also supported on the MDR-Player 6.0.

The map area has two options when viewing GPS data. When the icons are green, this implies that this feature is active.

- Lock map to vehicle automatically  . This means that the vehicle will be centred in the map and users will be unable to move the map freely.
- Show Line/Hide Line  is used to show the tracking data of the vehicle's route.

There are also **zoom in** and **zoom out** buttons located on the bottom right of the map. 



MDR-Player 6.0 Map Figure 255

11 Advanced Ethernet Configurations

This section is dedicated to an advanced feature for individuals with networking knowledge which enables users to:

- Live View of Cameras
- Playback and download recordings
- View and download logs
- Configure MDR unit settings

This feature is not recommended for field operations, diagnosis and configuration.

***Warning*: The web interface menu below does not match the OSD menu found on the MDR. Terminology may differ but the same settings can be found.**

***Warning*: To achieve full functionality (snapshots, downloads, live view etc.) open Internet Explorer by running as Administrator for Windows 8 and Windows 10 operating systems.**

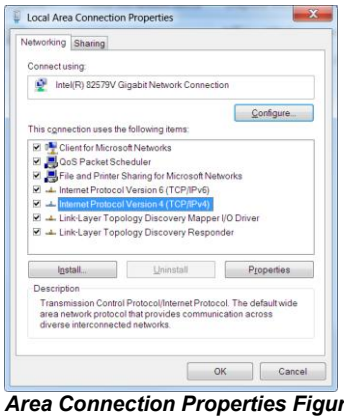
Note: The configuration requires a Cat5e cable, a Microsoft Windows™ Operating system; a PC with an Ethernet RJ45 port and a wireless adapter with Internet Access (may be needed to download the plugin).

***Warning*: Playback, Live view and Maintenance features are dependent on your Internet Explorer version.**

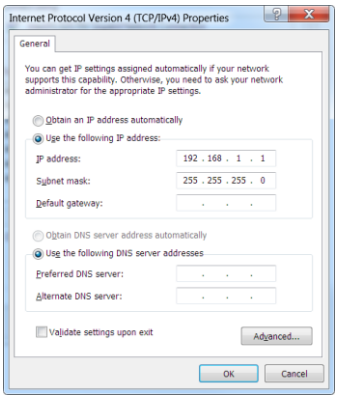
Internet Explorer Version Figure 256

11.1 Ethernet Setup

- Connect an Ethernet cable to the PC and Ethernet LAN port on the back of the MDR.
- The following steps apply to PCs running Windows 7 upwards. Before making changes to the PC's network settings, ensure all work is saved.
- *Local Area Connection Properties Figure 257* shows the network configuration window. This dialog may be accessed by right clicking on "Open Network and Sharing Centre" on the desktop  . Select the appropriate network interface by double clicking.



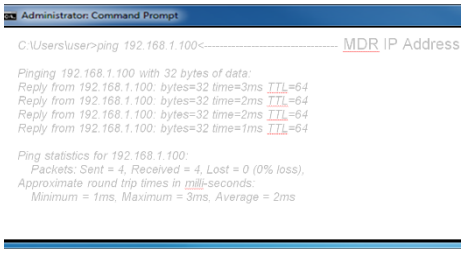
Local Area Connection Properties Figure 257



Internet Protocol Version 4 Figure 258

- Select the "Internet Protocol Version 4 (TCP/IPv4)" item and click "Properties". *Internet Protocol Version 4 Figure 258* is displayed; an IP address should be entered in this box; ***192.168.1.1*** is shown in the example. (This address is on the same subnet as the MDR, which has a default IP address of ***192.168.1.100***).
- To locate the MDR IP, log into the MDR menu, go to **Basic Setup → Ethernet** and check the IP address.
- To change, type the new IP address and click save.

MDR Network Settings Figure 259



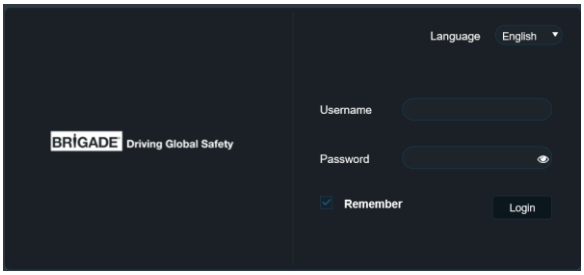
Results from Command Prompt Figure 260

- To test the PC connection to the MDR, open the Command prompt by typing cmd within the start-up menu. Ping the MDR IP address by typing ***ping 192.168.1.100***. These results are shown in *Results from Command Prompt Figure 260*.
- Open an Internet Explorer web page and type the following http://192.168.1.100. A pop-up window will appear in Internet Explorer requesting permission to allow the installation/running of a plugin "N9M_ACTIVEX". See *Plugin Pop-up Figure 262.*
- Allow the plugin and its installation.
- After the plugin is successfully installed, the login window (*Web User Login Figure 263*) will appear.
- Enter the appropriate password (same as MDR unit login) to grant the correct permissions, and then click **LOGIN**.

Internet Explorer Web Address Figure 261

Plugin Pop-up Figure 262

Note: If MDR unit password is disabled, click **LOGIN** after entering a username only.If this is the first time logging in the MDR, users are required to set a



Web User Login Figure 263

new password for the device. Please login with the username/password combination “admin/admin” or “user/user” to trigger the password setup process. Any other combination will result in a login failure.

11.2 Ethernet Operation

- Once logged in, 5 tabs will be displayed as follows: **PLAYBACK**; **LIVE VIEW**; **MAINTENANCE**; **LOG** and **SETUP**. See *Web Application Manager Figure 264*.
- PLAYBACK tab allows users to view and download recordings.
- Live view tab allows users to view the live cameras.
- MAINTENANCE shows you basic information, device module information, storage device information and version information.
- LOG is used to display and export logs.
- Setup is used to configure MDR settings such as basic setup, surveillance, events and alarms.
- PLAYBACK tab allows users to view and play recordings. Users can SEARCH by date, type, time, channel and the source of the recording.
- Clicking various calendar dates will automatically load video data in the timeline.
- Snaps are saved in the following path (Default): C:\Users\Administrator\NVR\192.XXX.XXX.XXX\CAPTURE\CHXX
  Note: Please use admin account to operate, also use admin authority to open the IE web browser (right click run as administrator), or snaps will be saved in a Windows temp folder called: C:\Users\XXXXX\AppData\Local\Microsoft\Windows\INetCache\Virtualized\C\Users\XXXXX\NVR\XXX.XXX.XXX.XXX\CAPTURE. This folder is invisible most of the time. Please follow online instructions to unhide those folders as needed.
- See the toolbar and the view options shown below:

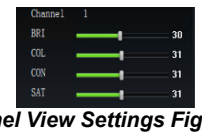
Playback Toolbar Figure 265

Playback View Options Figure 266

- PLAYBACK will also show a record list based on your search which can be downloaded. You can access this by clicking on Record List found below the Search button.
- Tick which channels you would like to download then click Backup.
- Then a pop-up window will ask for that data type.
- Proprietary and AVI data is stored in the following path (Default): C:\Users\Administrator\NVR\192.168.1.100\BACKUP
  Note: Please use computer admin profile to operate, also use admin authority to open the IE web browser (right click run as administrator)

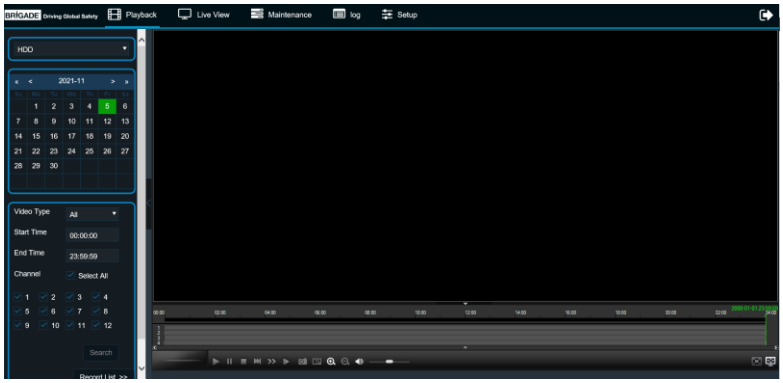
- Live view is used to view live cameras. Audio is also accessible. The green outline indicates which channel's audio is playing.
- See view options below. Snaps are saved in the same path as above. Each channel settings can be adjusted individually such as brightness, colour, contrast and saturation using  .
- You can switch between main stream and sub stream using options in *Live Stream Options Figure 271.*

Live View Options Figure 269

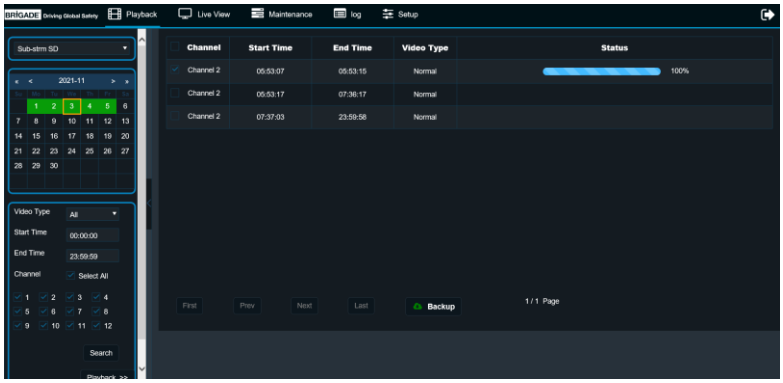


Live Channel View Settings Figure 270

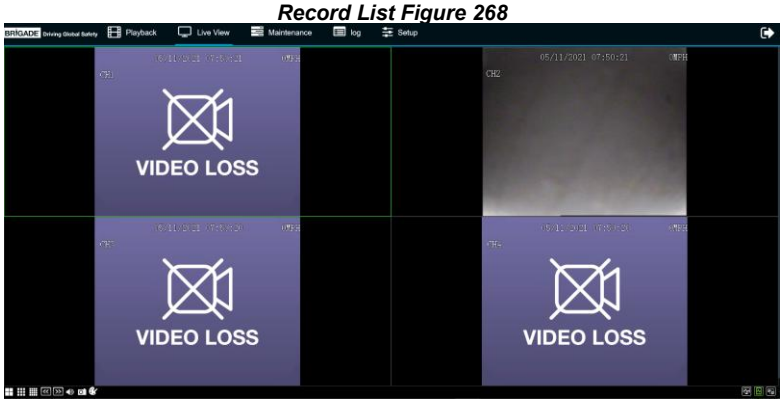
Web Application Manager Figure 264



Playback Figure 267



Record List Figure 268

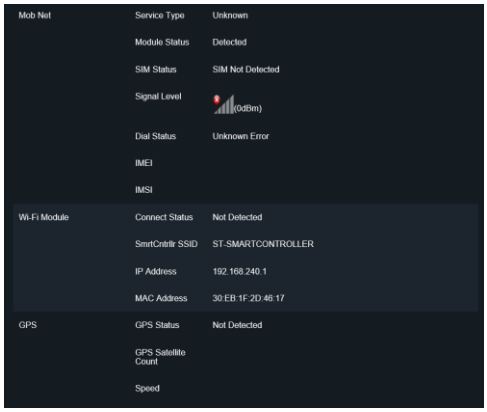


Live View Figure 272

Live Stream Options Figure 271

11.3 Ethernet Maintenance

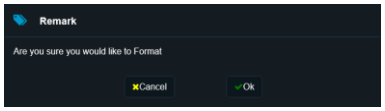
- Version Information displays firmware version, MCU version, IP camera firmware version, mobile network module firmware and Algorithm version (which is not in use currently).
- Device module displays information with regards to the mobile network, Wi-Fi and GPS module. See below:



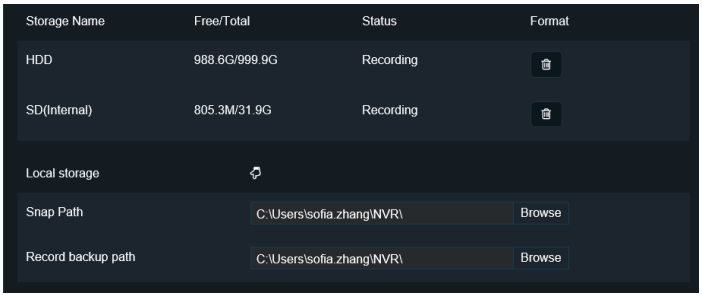
Ethernet Module Information Figure 273

Ethernet Version Information Figure 274

- **Storage Device** is used for varied features. It shows all storage devices, HDD, SD(Internal), SD(FPB) and FRONT USB. The free/total capacities are displayed.
- You can format a chosen storage device by clicking . See below for format confirmation window.
- Under the **Local Storage** section, you define the path used for snaps and video backups. By default, this is set to: C:\Users\Administrator\NVR\

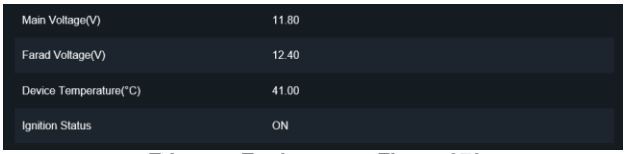


Ethernet Format Confirmation Figure 275

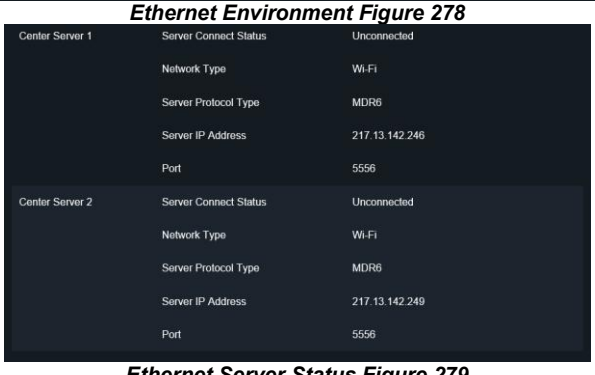


Ethernet Storage Devices Figure 276

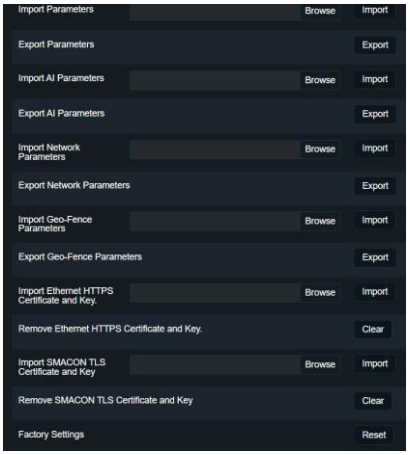
- **Environment** shows the device voltage, device temperature and ignition status. This is aligned with MDR OSD.
- **Server Status** shows current configured server connection status. This is aligned with MDR OSD.
- **Configuration** files can be exported or imported. Once you click export an Internet Explorer prompt will ask to save the file.
- Importing a configuration file, requires you to have a config file already stored locally and this is then sent to the MDR.
- **Upgrade** support upgrade MDR FWM and Restart the unit. (R-Watch Upgrade is not in use)



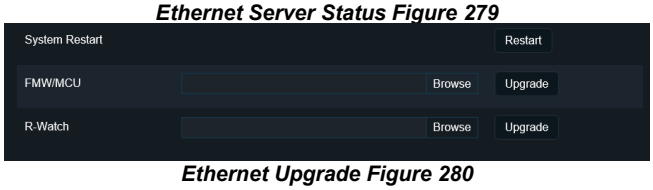
Ethernet Environment Figure 278



Ethernet Server Status Figure 279



Ethernet Config Figure 277

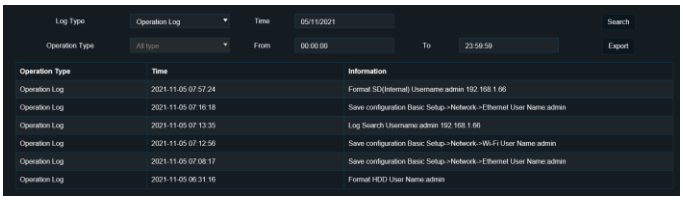


Ethernet Upgrade Figure 280

11.4 Ethernet Log

- Log is used to search, display and export logs from the MDR.
- Logs can be alarm logs, operation logs or locked logs.
- Alarm logs can be filtered further by type such as: IO, Panic, Speed, Video Loss, Blind detection, Motion detection, G-Force and Geo-Fence.
- Search results are displayed below containing information such as type, date, time and details.
- Exporting log files is done by clicking Export, this will then show an Internet Explorer prompt as shown below. Click Save. By default, this will save to the following path: C:\Users\Administrator\Downloads
- Exports are stored as .txt files which can be opened by a text editor such as Notepad™.

Ethernet Log File Figure 281



Ethernet Logs Figure 282

11.5 Ethernet Configuration

Ethernet configuration is a web version of the OSD map found on the MDR. Please refer to Chapter 5 Setup for further details. Ensure you click save after each change to ensure this gets sent to the MDR.

12 On-screen Display Map

Note: ***GREEN ARIAL BLACK ITALICS*** represents default settings

Lucida Handwriting Font represents mobile network and/or Wi-Fi menu options

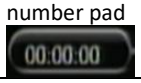
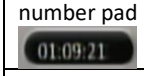
12.1 Rec Search

12.1.1 Rec Search

Rec Search	
TITLE	OPTION No 1
Source	***HDD***
	Sub-strm SD (not available for MDR 641 Series)
Drop down option	Main Strm SD (Not available for MDR 641 Series)
Month (XXX)	
Year (XXXX)	
Date	Choose on calendar view (Orange)
Next	----------→

Search Options	
TITLE	OPTION No 1
Video Type	***ALL***
	Normal
	Alarm
	Lock
Channel	***AVAILABLE INDIVIDUAL***
	1-4 group
	5-8 group
	9-12 group
Search	----------→

Search Options	
TITLE	OPTION No 1

Zoom Out			
Zoom In			
Earlier in day			
Later in day			
Channel options	***AVAILABLE INDIVIDUAL***		
Playback Start Time	Choose time using number pad 		
Export	Back		
	Start time	XX.XX.XX	
	End time	XX.XX.XX	
	Cancel		
	Export ------→	***PROPRIETARY DATA***	Export Time
		AVI Data	File Size
Playback (During Playback right-click removes OSD from view)	Show/Hide Volume menu 		Remaining/ Total
	Choose time using number pad 		
	Volume Increase 		
	Volume Decrease 		
	Mute Volume 		
	Next Channel 		
	Previous Channel 		
	Rewind x2 x4 x8 x16 		
	Play / Pause  		
	Fast Forward x2 x4 x8 x16 		
	Slow Forward 1/2 1/4 1/8 1/16 		
	Step 		
	Back 		

12.2 SYSTEM INFO

12.2.1 Version Info

Version Info	
TITLE	OPTION No 1
Device Name	MDR-644 Series / MDR-641 Series
Serial Num ?	***XXXXXXXXXX (10 characters)***
MAC Address	***XX:XX:XX:XX:XX:XX (12 characters)***
Firmware Version	XXXXXXXXXX
MCU Version	MDRXXXXXXXXX

12.2.2 Modules

12.2.2.1 Mob Net

Mob Net

TITLE	OPTION No 1
Connection Type	GPRS/EDGE
	CDMA
	EVDO
	WCDMA
	TDSCDMA
	FDD
	TDD
Module Status (Physical State)	EC25
	Not Detected
SIM Status (Physical State)	SIM Detected
	SIM Not Detected
	SIM Available
	SIM Not Available
	SIM Busy
Dial Status	Dialled Up
	Failed Dial Up
	DIAL UNKNOWN ERROR
Signal Level	 (XXdBm)
IP Address	XXX.XXX.XXX.XXX
IMEI	**XXXXXXXXXXXXXXX (15 characters)**
IMSI	**XXXXXXXXXXXXXXX (15 characters)**

12.2.2.2 Wi-Fi

Wi-Fi	
TITLE	OPTION No 1
Built-in Wi-Fi Status (Physical State)	Detected
	Not Detected
	Connecting
	Connection Failed
	Connected
	Obtaining IP Address (DHCP)
Signal Level	
IP Address	XXX.XXX.XXX.XXX
MAC Address	**XX:XX:XX:XX:XX:XX (12 characters)**
SmrtCntrllr Wi-Fi Status	Detected
	Not Detected
SmrtCntrllr SSID	Unique ID
SmrtCntrllr IP Address	XXX.XXX.XXX.XXX
SmrtCntrllr MAC Address	XX:XX:XX:XX:XX:XX (12 characters)

12.2.2.3 GPS

GPS	
TITLE	OPTION No 1
GPS Status (Physical State)	Detected
	Not Detected
	No GPS Module
GPS Satellite Count	1 - 24
Speed	MPH/ KM/H

12.2.3 Server Status

Centre Server #	
TITLE	OPTION No 1 (up to 8 using  buttons)
Server Status	**UNCONNECTED**
	Connected
Network Type	**Mob Net**
	Wi-Fi
	Ethernet
	Auto-adapt

Server Protocol Type	***MDR6***
Server IP Address	*XXX.XXX.XXX.XXX*
Port	*XXXXX (usually 5 characters, depends on port specification)*

12.2.4 Environment

Environment	
TITLE	OPTION No 1
Voltage (V)	XX.XX
Device Temperature (°C)	XX.XX
HDD Heater Status	Off
	On
Ignition Status	Off
	On

12.2.5 Storage

Storage	
TITLE	OPTION No 1
Storage Type	HDD
	SD (Internal)
	SD (FPB)
	FRONT USB
Status	Recording
	Normal
	Failed
Free/Total (in Megabytes, Gigabytes or Terabytes)	XXX.X/XXX.XG
Remain Time (in Days/Hours/Minutes)	X.X

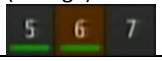
12.2.6 History

History	
TITLE	OPTION No 1
Highest Speed	xx MPH/KM/H, dd/mm/yyyy, hh:mm:ss
Total Mileage	xxxx.xxxx MILE / KM
Lowest Voltage	xx.xV, dd/mm/yyyy, hh:mm:ss
Highest Voltage	x.xV, dd/mm/yyyy, hh:mm:ss
Lowest Temperature	xx.x F/C, dd/mm/yyyy, hh:mm:ss
Highest Temperature	xx.x F/C, dd/mm/yyyy, hh:mm:ss
Highest Information Clean	

12.2.7 About

History	
TITLE	OPTION No 1
Free and Open-Source Software List	Details

12.3 LOG SEARCH

Log Search					
TITLE	OPTION No 1				
Month					
Year					
Date	Choose on calendar view (Orange) 				
Next	----------→	Start Time	hh:mm:ss	Using Number Pad.	
		End Time	hh:mm:ss		
		Log Type	***OPERATION LOG***		
			Alarm Log---→	Alarm Type---→	***ALL***

	Locked Log	IO Alarm
Search-→		Panic Button
		Speed Alarm
		Video Loss
		Motion
		G-Force
		Blind Detection
		Geo-Fence
		AI Alarm

12.4 SETUP

12.4.1 Basic Setup

12.4.1.1 Reg Info

12.4.1.1.1 Vehicle Info

Vehicle Info	
TITLE	OPTION No 1
Vehicle Reg (Shows on MDR-Dashboard)	XXXXXXXXXX (10 characters)
Vehicle Num (Shows on MDR-Dashboard)	XXXXXXXXXX (10 characters)

12.4.1.1.2 Driver Info

Driver Info	
TITLE	OPTION No 1
Driver Number (Not Shown in MDR-Dashboard)	XXXXXXXXXX (10 characters)
Driver Name (MDR-Dashboard Evidence Area)	XXXXXXXXXX (10 characters)

12.4.1.1.3 Company Info

Company Info	
TITLE	OPTION No 1
Company Name (Shows on MDR-Dashboard)	XXXXXXXXXXXXXXX (16 characters)
Company Branch (Shows on MDR-Dashboard)	XXXXXXXXX (8 characters)

12.4.1.2 Time Setup

12.4.1.2.1 General

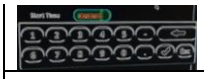
General		
TITLE	OPTION No 1	
Date Format	***DAY/MONTH/YEAR***	
	MONTH/DAY/YEAR	
	YEAR-MONTH-DAY	
Time Format	***24 HOURS***	
	12 Hours	
Time Zone	***(GMT) DUBLIN, EDINBURGH, LONDON***	(GMT/±HH:MM) "City[Cities]"

12.4.1.2.2 Time Sync

Time Sync		
TITLE	OPTION No 1	
Date/Time	Choose from calendar	dd/mm/yyyy
	Use numpad to enter time	hh:mm:ss
GPS	***ENABLED***	
	Disabled	
NTP sync (?)	Enabled ----------→	time.nist.gov
	DISABLED	
Center Server	***DISABLED***	
	Enabled	Choose from server 1 ~ Server X

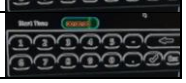
12.4.1.2.3 DST

DST			
TITLE	OPTION No 1		
Enable	***ENABLED***----------→	Start	***MAR.*** Choose Calendar Month = XXX
	Disabled		1ST; 2nd; 3RD; 4TH; ***LAST***
			SUNDAY Choose Day of Week

	***02:00:00*** Choose time hh:mm:ss
End	***OCT.*** Choose Calendar Month = XXX
	1st, 2nd; 3RD; 4TH; ***LAST***
	SUNDAY Choose Day of Week
	***02:00:00*** Choose time hh:mm:ss

12.4.1.3 Power

12.4.1.3.1 On/Off

On/Off				
TITLE	OPTION No 1			
On/Off Mode (?)	***IGNITION***			
	Timer ----------→	Timer From	Enter Start Time	hh:mm:ss
	Ignition or Timer--------→		Enter End Time	hh:mm:ss
Non-stop (?)	Enabled (Disables Shutdown Delay)			
	DISABLED			
Shutdown Delay	***600 SECONDS*** (0-86399) seconds	Using Number Pad		
Shutdown Recording Delay (?)	***600 SECONDS*** (0-86399) seconds	Using Number Pad		

12.4.1.3.2 Voltage

Voltage			
TITLE	OPTION No 1		
Low Voltage Protection	Enabled-----→	Low Voltage (8~11.5) V / (20~23.5) V	***11.0 V / 22.0 V***
	DISABLED	Start-up Voltage (12~14) V / (24~26) V	***12.0 V / 24.0 V***
		Observe Time (Period observed for it to be considered a low voltage event)	***300 SECONDS*** (0-1800) seconds
		Low Volt Upload (Uploads Low Volt Information to MDR Server, requires mobile network or Wi-Fi MDR model)	Enabled
			DISABLED

12.4.1.3.3 Sleep

Sleep			
TITLE	OPTION No 1		
Sleep Mode (?)	Enabled-----→	Sleep Duration	***100*** (0~100)Hours
		Periodic Wake-up	***5*** (0~720)Min
	DISABLED		

12.4.1.4 User Setup

USER SETUP					
TITLE	OPTION No 1				
Menu Idle Time (Automatically Logout Period)	30 Seconds				
	1 Minute				
	3 MINUTES				
	5 Minutes				
	10 Minutes				
	Never				
Username	admin	Enabled --→	Edit ---------→	Username	XXXXXXXXXX (10 characters)
	user			User Group	Admin
User Group	Admin				Normal User
	Normal User			New Password	XXXXX…XXXXX (16 characters)
Add (?) (Active if a maximum of 2 user accounts exist)	Username			Confirm New Password	
	User Group		Delete (user only)		
	Password				

	Confirm Password

12.4.1.5 HDD Key

HDD Key			
TITLE	OPTION No 1		
Storage Name	***HDD***		
	SD(Internal)		
Storage Protected Enable	Enabled--------→	New Password	XXXXXXXX (8 Characters)
		Old Password	XXXXXXXX (8 Characters)
	DISABLED		

12.4.1.6 Network

12.4.1.6.1 Ethernet

Ethernet				
TITLE	OPTION No 1			
DHCP Mode ?	Enabled----------→			
	DISABLED			
Static IP	***ENABLED***----------→	IP Address	***192.168.001.100***	
	Disabled	Subnet Mask	***255.255.255.000***	
		Gateway	***192.168.001.254***	
		Use following DNS -----→	Preferred DNS Server	***008.008.008.008***
			Alternate DNS Server	***008.008.004.004***
OBTAIN DNS AUTO	***DISABLED***			
	Enabled			
Use following DNS -----→	Preferred DNS Server	***008.008.008.008***		
	Alternate DNS Server	***008.008.004.004***		

12.4.1.6.2 Ports

Ports	
TITLE	OPTION No 1
Ethernet HTTPS ?	***ENABLED***
	Disabled
Web Port (IE access to MDR using Ethernet)	***443***
	80 (If Ethernet HTTPS is disabled)
RTSP Port	***554***
SAMCON TLS ?	***ENABLED***
	Disabled

12.4.1.6.3 Wi-Fi

Wi-Fi					
TITLE	*OPTION No 1*				
Enable	***OFF***				
	On --------→	*SSID*	*XXXXX…XXXXX (32 characters)*		
		Encryption -→	*None*		
			WEP ---------→	*Password*	*XXXX…XXXX (32 characters)*
			WPA/WPA2-PSK *----------→*		
			WPA2_Enterprise----------→		
		Static IP	*Enabled ----→*	*IP Address*	*XXX.XXX.XXX.XXXX*
			DISABLED	*Subnet Mask*	*XXX.XXX.XXX.XXXX*
				Gateway	*XXX.XXX.XXX.XXXX*
	SmartController	*SSID*	*XXXXX…XXXXX (32 characters)*		
		Encryption ----------→	*None*		
			WEP ---------→ *WPA---------→*	*Password*	*XXXX…XXXX (32 characters)*

		None			

12.4.1.6.4 Mob Net

Mob Net					
TITLE	OPTION No 1				
MTU	**1500** (1~1500)				
Enable	**OFF**				
	On				
Server Type	No Service				
	GPRS/EDGE				
	CDMA				
	EVDO				
	WCDMA				
	TDSCDMA				
	FDD				
	TDD				
Network Type	**4G**				
	3G				
	Mix				
APN	XXXX…XXXX (31 characters)				
Username	XXXX…XXXX (31 characters)				
Password	XXXX…XXXX (31 characters)				
Access Number	***99#**				
Certification	**NONE**				
	PAP				
	CHAP				
	Mix				
Active Mode	**ALWAYS**				
	Phone/SMS----------→				

Number1	XX…XXX (16 characters)
Number2	XX…XXX (16 characters)
Number3	XX…XXX (16 characters)

12.4.1.6.5 Server

Server					
TITLE	OPTION No 1				
Centre Server	**SERVER 1** ----→	Add/ Delete			
	Server 2 ----→	Add/ Delete			
	Server 3 ----→	Add/ Delete			
	Server 4 ----→	Add/ Delete			
	Server 5 ----→	Add/ Delete			
	Server 6 ----→	Delete			
ON	**ENABLED** ---→	TLS ENABLE	**ENABLED** ---→	Verify Certificate	**DISABLED**
					Enabled
			Disabled		
		Protocol Type --→	**MDR6**		
		Network Mode -→	Ethernet		
			Wi-Fi		
			MOB NET		
			Auto Adapt		
		MDR Server IP	XXX.XXX.XXX.XXXX		
		MDR Server Port	TCP	**5556** (If Server TLS is disabled)	
			TLS	**6556**	
		Media Server IP	XXX.XXX.XXX.XXXX		
		Media Server Port	TCP	**5556** (If Server TLS is disabled)	
			TLS	**6556**	
	Disabled				

12.4.1.7 Application

12.4.1.7.1 FTP Server

FTP Server	
TITLE	OPTION No 1
FTP Enable	Disabled
	Enabled
Server	***192.168.1.200***
port	***21***
Username	***admin***
Password	XXXX…XXXX (32 characters)

12.4.1.8 Other Setup

12.4.1.8.1 Algorithm

Algorithm	
TITLE	OPTION No 1
ADAS Camera Install Height	***153*** (50 ~ 400)CM
ADAS Camera Left Margin	***120*** (0~400)CM
Front-end Width	***240*** (0~400)CM
Front-end Length	***50*** (0~400)CM
Unit Type	***CM***
	Inch
AI Voice Enable(All)	***ENABLED***
	Disabled
Hazard Warning Unit Voice Enable(All)	***ENABLED***
	Disabled
Hazard Warning Unit Brightness	***2*** (0~8)

12.4.2 Surveillance

12.4.2.1 Live View

12.4.2.1.1 Preview

Preview				
TITLE	OPTION No 1			
Live Audio	Enabled			
	DISABLED			
Image Setup	Setup ----------→	BRI (Brightness)	***31*** 	
		CON (Contrast)	***31*** 	
		COL (Colour)	***31*** 	
		SAT (Saturation)	***31*** 	
		Channel	Choose from 1 to 12	
		Mirror/Normal (Mirrors Live and Recorded Data)		
		Flip Vertical (Flips Live and Recorded Data)		
		Copy to	***ALL*** Choose from 1 to 12	Copy
Margins	Setup ----------→	Margin-Top	***20*** 	
		Margin-Bottom	***20*** 	
		Margin-Left	***45*** 	
		Margin-Right	***45***	

Start-up Screen	Single		
	QUAD		
	9-Split		
Channel	Choose from 1-12	***ENABLED***	
		Disabled	

12.4.2.1.2 Autoscan

Autoscan					
TITLE	OPTION No 1				
Autoscan Enable (Max 32)	Enabled ----------→	Add Screen --------→	Mode	***1 X 1***	
	DISABLED			2 X 2	
				3 x 3	
			Layout	Assign channels to each area	
			Duration	***5 SECONDS*** (1-300 seconds)	
		Edit Screen----→	Mode	***1 X 1***	
				2 X 2	
				3 x 3	
			Layout	Assign channels to each area	
			Duration	***5 SECONDS*** (1-300 seconds)	
		Delete			

12.4.2.1.3 Live OSD

Live OSD		
TITLE	OPTION No 1	
Date/Time	***ENABLED***	
	Disabled	
Vehicle Reg	Enabled	
	DISABLED	
Alarm	***ENABLED*** (in MDR-641 Series)	
	DISABLED (in MDR-644 Series)	
Vehicle Num	Enabled	
	DISABLED	
Recording State	***ENABLED***	
	Disabled	
Speed	***ENABLED***	
	Disabled	
GPS	Enabled	
	DISABLED	
Channel name	***ENABLED***	
	Enabled	
G-Force	Enabled	
	DISABLED	
Position	Setup	Drag OSD items to desired positions on screen

12.4.2.2 Record

12.4.2.2.1 General

General		
TITLE	OPTION No 1	
Video Format	***PAL-AHD***	
	NTSC-AHD	
HDD/SD Overwrite	By Days----------→	***1*** (1-31 Day)
	BY CAPACITY	
	Never	
Locked File Retention ⓘ	***7*** (1-31 Day)	
Alarm Pre-recording	***ENABLED***----------→	***30 SECS***

	Disabled	1 Min		
		3 Min		
		5 Min		
		10 Min		
		15 Min		
		30 Min		
		1 Hour		
Enable Live View	***ENABLED***	***All Channels***		
SD Record Mode (not available for MDR-641 Series)	***SUB-STREAM***-----→	Sub-Stream CH	Choose from 1-12	
	HDD (Main Stream)	Mirror CH	Choose from 1-12	
	Alarms (HDD)	Alarm CH	Choose from 1-12	
	None			
SD Write Resource Ratio (not available for MDR-641 Series)	xx.x%			
Recording Storage (not available for MDR-641 Series)	***INTERNAL SD***			
	FPB SD			

12.4.2.2.2 HDD

HDD							
TITLE	OPTION No 1						
Channel	Choose from all available channels						
Channel Name	***CH1…CHX***						
Enable Recording	***ENABLED***						
	Disabled						
Resolution (options auto-adjust based on available camera inputs)	CIF						
	WCIF						
	HD1						
	WHD1						
	D1						
	WD1 (960H)						
	720p (AHD/IP)						
	960p (AHD/IP)						
	1080p (AHD/IP)						
Encode Standard	***H264***						
	H265						
Frame Rate	***20*** - Choose from 1 to 30						
Quality	***2*** - Choose from 1 (Best) to 8	xxxKbps (Transmission speed for this channel)					
Record Mode (?)	***IGNITION***				Delete		
	Timer -------→	Schedule-→	Choose from Sun to Sat	Add a Plan	Start Time	hh:mm:ss	
	Alarm				End Time	hh:mm:ss	
Audio	***ALWAYS AUDIO***				Video Type→	Normal	
	No Audio						
	Alarm Audio					Alarm	
Alarm Quality	***1*** Choose from 1 (Best) to 8						
Encode Mode	***CBR***						
	VBR						
Audio Coding Format	ADPCM						
	G711U						
	G711A						
Percentage of Main Stream	xx.x%						
Copy to	***ALL***						
	Choose from all available channels						

12.4.2.2.3 SD

SD		
TITLE	OPTION No 1	
Channel	Choose from all available channels	
Enable	Disabled	
	ENABLED	
Encoded Standard	***H264***	
	H265	
Audio	No Audio	
	Alarm Audio	
	ALWAYS AUDIO	
Resolution (options auto-adjust based on available camera)	***CIF***	
	HD1	
	D1	
Frame Rate	***5*** Choose from 1 to 30	
Quality	***2*** Choose from 1 (Best) to 8	xxxKbps (Transmission speed for this channel))
Copy to	***ALL***	
	Choose from all available channels	

12.4.2.2.4 Record OSD

Record OSD		
TITLE	OPTION No 1	
Date/Time	***ENABLED***	
	Disabled	
Vehicle Reg	***ENABLED***	
	Disabled	
Channel Name	***ENABLED***	
	Disabled	
G-Force	Enabled	
	DISABLED	
Speed	***ENABLED***	
	Disabled	
GPS	Enabled	
	DISABLED	
Vehicle Num	Enabled	
	DISABLED	
Alarms	***ENABLED***	
	Disabled	
Position (?)	Setup ----------→	Drag OSD items to desired positions on screen

12.4.2.3 IPC Setup

IPC Setup						
TITLE	OPTION No 1					
Channel 1 X	Enable --→	IP And Port xxx.xxx.xxx.xxx:xxxx	Search -→ 	MAC Address	Enabled ---→	IP Address
					Disabled	
				Protocol type	***MDR6***----→	Port 9006
					ONVIF ----→	Port 9007
			Network Setup -→	Remote Device	***DEFAULT***	
					DSM	
				Protocol Type	***MDR6***	
					ONVIF	
				IP Address	xxx.xxx.xxx.xxx	
				Port	***9006***	
				Username	***admin***	
				Password	xxxxxxxxxxxxxxx	
			Outside	Enabled		
				DISABLED		

		DISABLED
Local Address	*10.100.100.*	***1*** (Choose from 1 to 253)

12.4.3 Events

12.4.3.1 General

12.4.3.1.1 Peripherals

Peripherals	
TITLE	OPTION No 1
Remote Panel	***OFF*** (in MDR-644 Series)
	ON (in MDR-641 Series)

12.4.3.1.2 Speed

SPEED					
TITLE	OPTION No 1				
Unit	KM/H				
	MPH				
Source	***GPS***				
	CAN (not currently available, for future use)				
	Speed Pulse ------→	Calibration Mode	Input Manually	Start	xx:xx:xx
				Finish ----------→	Calculate
			Auto Correct---→	Correct	
		Pulse Ratio	Per Mile / Per KM		

12.4.3.1.3 Mileage

Mileage		
TITLE	OPTION No 1	
Total Mileage	X.XXXX Mile/KM	
Actual Mileage	***0*** (0-4000000) Mile/KM	
Mileage Setup	Confirm	Are you sure you would like to set the mileage value?
	Clear	Are you sure you would like to set the total mileage to zero?

12.4.3.1.4 Unit

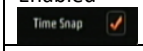
Unit	
TITLE	OPTION No 1
Temperature	***CELSIUS(°C)***
	Fahrenheit(°F)

12.4.3.1.5 CAN (not currently available, for future use)

CAN	
TITLE	OPTION No 1
Name	CAN1
Type	***NULL***
	J1939
Baud Rate	***125***
	50
	100
	250
	500
	100

12.4.3.2 Snapshots

12.4.3.2.1 Time Snap

Time Snap						
TITLE	OPTION No 1					
Time Snap	Enabled ----------→ 	Add ----------→	New No. gets added			
	DISABLED					
No. 1 – 8 (maximum)	Start Time (Time of Day)	Using NumPad: 	hh:mm:ss			
	End Time		hh:mm:ss			
	 Delete	Disabled for No. 1				
	 Snap Link Setup -→	Channel	Choose from 1 to 12			
		Snap Enable ------→	Enabled -------→	Resolution	CIF	
			DISABLED		WCIF	
		Copy to	***ALL***		HD1	
			Choose from 1 to 16		WHD1	
					D1	
					WD1	
					720p	
					960P	
					1080p	
				Quality	***1*** Choose from 1(Best) to 8	
				Upload Type	***FTP DISABLED***	
					FTP Enabled	
				Snap Count	***1*** (1~3) pcs	
				Snap Interval	***5*** (5~3600) seconds	

12.4.3.2.2 IO Snap

IO Snap						
TITLE	OPTION No 1					
Alarm Snap	Snap Link Setup--------→	Channel	Choose from 1 to 12			
		Snap Enable ------→	Enabled ---------→	Resolution	CIF	
			DISABLED		WCIF	
		Copy to	***ALL***		HD1	
			Choose from 1 to 16		WHD1	
					D1	
					WD1	
					720p	
					960P	
					1080p	
				Quality	***1*** Choose from 1(Best) to 8	
				Upload Type	***FTP DISABLED***	
					FTP Enabled	
				Snap Count	***1*** (1~3) pcs	
				Snap Interval	***5*** (5~3600) seconds	
Mob App/Web Snap (IE access to MDR)	Snap Link Setup --------→	Channel	Choose from 1 to 12			
		Snap Enable -----→	Enabled ---------→	Resolution	CIF	
			DISABLED		WCIF	
		Copy to	***ALL***		HD1	
			Choose from 1 to 16		WHD1	
					D1	
					WD1	
					720p	
					960P	
					1080p	

Upload Type	***FTP DISABLED***
	FTP Enabled
Quality	***1*** Choose from 1(Best) to 8
Snap Count	***1*** (1~3) pcs

12.4.4 Alarms

12.4.4.1 General

12.4.4.1.1 Speed Alarm

Speed Alarm						
TITLE	OPTION No 1					
Overspd	Enabled---→	Alarm Type	***ALARM***			
	DISABLED		Event			
		Trigger	Early Difference	***10*** MPH		
			Speed	***80*** MPH		
			Duration Time	***10*** (0~255) seconds		
			Alarm Off-Delay	***10*** (0~10) seconds		
		Alarm Link Setup	----------→	Channel	***Tick AVAILABLE CHANNELS***	
				Audio	***Tick AVAILABLE CHANNELS***	
				Audio Duration	NONE	
					1 Min	
					3 Min	
					5 Min	
					10 MIN	
					15 Min	
					30 Min	
				Post Record	NONE	
					1 Min	
					3 Min	
					5 Min	
					10 MIN	
					15 Min	
					30 Min	
				Lock	Enabled	
					DISABLED	
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
				2----------→		
			Channel Link	***NONE***		
				Single ----------→	Setup ----------→	Edit Screen Layout
				Double----------→	Setup ----------→	Edit Screen Layout
				Three----------→	Setup ----------→	Edit Screen Layout
				Quad ----------→	Setup ----------→	Edit Screen Layout
			Buzzer	Enabled		
				DISABLED		
			Buzzer Duration	Always		
				Timer--------→	***10*** (05 - 60 seconds)	
			Alarm Snap	Enabled		
				DISABLED		

12.4.4.1.2 Panic Alarm

Panic Alarm				
TITLE	OPTION No 1			
Panic Bttn	***ENABLED***→	Alarm Type	***ALARM***	
	Disabled		Event	
		Trigger	Activation Period	***1*** (1~255) seconds

	Alarm Off-Delay ?	***10*** (0~10) seconds		
Alarm Link Setup	----------→	Channel	***TICK AVAILABLE CHANNELS***	
		Audio	***TICK AVAILABLE CHANNELS***	
		Audio Duration	NONE	
			1 Min	
			3 Min	
			5 Min	
			10 MIN	
			15 Min	
			30 Min	
		Post Record	NONE	
			1 Min	
			3 Min	
			5 Min	
			10 MIN	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ----------→	Edit Screen Layout
		Double----------→	Setup ----------→	Edit Screen Layout
		Three----------→	Setup ----------→	Edit Screen Layout
		Quad ----------→	Setup ----------→	Edit Screen Layout
	PB Alarm Duration	***20*** (0 - 25 seconds)		
	Buzzer	Enabled		
		DISABLED		
	Buzzer Duration	Always		
		Timer--------→	***10*** (05 - 60 seconds)	
	Alarm Snap	Enabled		
		DISABLED		

12.4.4.1.3 IO Alarm

IO Alarm					
TITLE	OPTION No 1				
IO #	***ENABLED***→	Alarm Type	Alarm		
	Disabled		***EVENT***		
		Trigger	Sensor Name	IO1	
			OSD Name	Rv	
			Sensor Uses	***NONE***	
				Right Steering	
				Left Steering	
				Reverse	
				Seat Belt	
				Privacy	
			Trigger Source	***VOLTAGE***	
				Pulse	
				CAN (not in use)	
			IO Set	Low	
				HIGH	
			Alarm Off-Delay	***1*** (0~10) seconds	
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***

				Audio	***UNTICK AVAILABLE CHANNELS***		
				Audio Duration	NONE		
					1 Min		
					3 Min		
					5 Min		
					10 MIN		
					15 Min		
					30 Min		
				Post Record	NONE		
					1 Min		
					3 Min		
					5 Min		
					10 MIN		
					15 Min		
					30 Min		
				Lock	Enabled		
					DISABLED		
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds	
				2----------→			
			Channel Link	***NONE***			
				Single ----------→	Setup ----------→	Edit Screen Layout	
				Double----------→	Setup ----------→	Edit Screen Layout	
				Three----------→	Setup ----------→	Edit Screen Layout	
				Quad ----------→	Setup ----------→	Edit Screen Layout	
			Buzzer	Enabled			
				DISABLED			
			Buzzer Duration	Always			
				Timer--------→	***10*** (05 - 60 seconds)		
			Alarm Snap	Enabled			
				DISABLED			
Copy	IO #	***ALL*** -------→	Copy				
		Choose from 1 to 8 IO--→					

12.4.4.2 Video

12.4.4.2.1 Video Loss

Video Loss							
TITLE	OPTION No 1						
Video Loss	***ENABLED***→	Alarm Type	***ALARM***				
	Disabled		Event				
		Trigger Setup	Video Loss Setup	Channel	***TICK AVAILABLE CHANNELS***		
				Effective Time	***5*** (0~10) seconds		
		Alarm Link Setup	----------→	Channel	***Tick 12 CHANNELS***		
				Audio	***Tick 12 CHANNELS***		
				Audio Duration	NONE		
					1 Min		
					3 Min		
					5 Min		
					10 MIN		
					15 Min		
					30 Min		

		Post Record	NONE	
			1 Min	
			3 Min	
			5 Min	
			10 MIN	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ---------- →	Edit Screen Layout
		Double----------→	Setup ---------- →	Edit Screen Layout
		Three----------→	Setup ---------- →	Edit Screen Layout
		Quad ----------→	Setup ---------- →	Edit Screen Layout
	Buzzer	***ENABLED***		
		Disabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Snap	Enabled		
		DISABLED		

12.4.4.2.2 Motion Det

Motion Det						
TITLE	OPTION No 1					
MD	Enabled---→	Alarm Type	***ALARM***			
	DISABLED		Event			
		M.D Setup	Channel Enable (1 to 12)	Enabled -------→	Sensitivity	1 (Most)
						2
						3
						4
						5
						6
						7
						8
					Area	Setup
					Activated	***SHUTDOWN DELAY***
						Ignition On
						Both
				DISABLED		
			Alarm Off-Delay	***10*** (0~10) seconds		
		Alarm Link Setup	----------→	Channel	***TICK AVAILABLE CHANNELS***	
				Audio	***TICK AVAILABLE CHANNELS***	
				Audio Duration	NONE	
					1 Min	
					3 Min	
					5 Min	
					10 MIN	
					15 Min	
					30 Min	
				Post Record	NONE	
					1 Min	
					3 Min	

			5 Min	
			10 MIN	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ----------→	Edit Screen Layout
		Double----------→	Setup ----------→	Edit Screen Layout
		Three----------→	Setup ----------→	Edit Screen Layout
		Quad ----------→	Setup ----------→	Edit Screen Layout
	Buzzer	Enabled		
		DISABLED		
	Buzzer Duration	Always		
		Timer--------→	***10*** (05 - 60 seconds)	
	Alarm Snap	Enabled		
		DISABLED		

12.4.4.2.3 Blind Det

Blind Det						
TITLE	OPTION No 1					
BD	Enabled---→	Alarm Type	***ALARM***			
	DISABLED		Event			
		B.D Setup	Channel (1 to 12)	Enabled -------→	Sensitivity	***High***
						Middle
						Low
					Duration Time	***5*** (0~255) seconds
					Alarm Off-Delay	***10*** (0~10) seconds
				DISABLED	***TICK AVAILABLE CHANNELS***	
		Alarm Link Setup	----------→	Channel	***TICK AVAILABLE CHANNELS***	
				Audio	NONE	
				Audio Duration	1 Min	
					3 Min	
					5 Min	
					10 MIN	
					15 Min	
					30 Min	
					NONE	
				Post Record	1 Min	
					3 Min	
					5 Min	
					10 MIN	
					15 Min	
					30 Min	
					Enabled	
				Lock	***DISABLED***	
					Alarm O/P Duration	***0*** (0~255) seconds
			Alarm O/P Link	1 ----------→		
				2----------→		

Channel Link	***NONE***	Setup ----------→	Edit Screen Layout
	Single ----------→	Setup ----------→	Edit Screen Layout
	Double----------→	Setup ----------→	Edit Screen Layout
	Three----------→	Setup ----------→	Edit Screen Layout
	Quad ----------→		
Buzzer	Enabled		
	DISABLED		
Buzzer Duration	Always	***10*** (05 - 60 seconds)	
	Timer--------→		
Alarm Snap	Enabled		
	DISABLED		

12.4.4.2.4 Privacy Mode

Privacy Mode						
TITLE	OPTION No 1					
BD	Enabled---→	Alarm Type	***Event***			
	DISABLED		Alarm			
		Setup	Channel (1 to 12)	Enabled Channel 2-------→	Privacy Method	***IO***
						Ignition OFF
					Exit Method	***Speed 5***(1-120MPH)
						IO
						Ignition ON
					Enable AI Mp3 Voice	***DISABLED***
						Enabled
					Alarm Voice Enable	***ENABLED***
						Disabled
					Effective Time	***10*** (0-65535 Seconds)
				DISABLED		

12.4.4.3 Advanced

12.4.4.3.1 G-Force

G-Force							
TITLE	OPTION No 1						
G-Force	Enabled-----→	Alarm Type	***ALARM***				
			Event				
	DISABLED						
Real-Time	X:						
	Y:						
	Z:						
Auto Calibration	***ENABLED***						
	Disabled →	Calibrate					
Installation Angle	Row:						
	Pitch:						
	Yaw:						
100HZ G-Force Value	Enabled						
	DISABLED						
Self-checking	Normal						
		G-Force Trigger	Harsh Braking	***ENABLED***	***0.500 (0.001~1)***	***20~50 (0~200) MPH***	
				Disabled			
			Hard Acceleration	***ENABLED***	***0.500 (0.001~1)***	***20~50 (0~200) MPH***	
				Disabled			

	Harsh Left Turn	***ENABLED***	***0.500 (0.001~1)***	***20~50 (0~200) MPH***
		Disabled		
	Harsh Right Turn	***ENABLED***	***0.500 (0.001~1)***	***20~50 (0~200) MPH***
		Disabled		
	Shock	Enabled	X: 1.0 (0.1~8)	
			Y: 1.0 (0.1~8)	
			Z: 2.0 (0.1~8)	
		DISABLED		
	Alarm Off-Delay	***10*** (0~10) seconds		
	Recommend Settings	Light Duty		
		Medium Duty		
		Heavy Duty		
Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***	
		Audio	***UNTICK AVAILABLE CHANNELS***	
		Audio Duration	NONE	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Post Record	NONE	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ----------→	Edit Screen Layout
		Double----------→	Setup ----------→	Edit Screen Layout
		Three----------→	Setup ----------→	Edit Screen Layout
		Quad ----------→	Setup ----------→	Edit Screen Layout
	Buzzer	Enabled		
		DISABLED		
	Buzzer Duration	Always		
		Timer--------→	***10*** (05 - 60 seconds)	
	Alarm Snap	Enabled		
		DISABLED		
	Alarm Voice	Enabled		
		DISABLED		

12.4.4.3.2 Geo-Fencing

Geo-Fence			
TITLE	OPTION No 1		
Enable	***ON***		
	Off		
	Alarm Link Setup ----------→	Channel	***UNTICK AVAILABLE CHANNELS***

	Audio	***UNTICK AVAILABLE CHANNELS***	
	Audio Duration	NONE	
		1 Min	
		3 Min	
		5 Min	
		10 MIN	
		15 Min	
		30 Min	
	Post Record	NONE	
		1 Min	
		3 Min	
		5 Min	
		10 MIN	
		15 Min	
		30 Min	
	Lock	Enabled	
		DISABLED	
Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
	2----------→	Alarm O/P Duration	***0*** (0~255) seconds
	Non-Stop ?	***DISABLED***	
		Enabled	
Channel Link	***NONE***		
	Single ----------→	Setup ----------→	Edit Screen Layout
	Double----------→	Setup ----------→	Edit Screen Layout
	Three----------→	Setup ----------→	Edit Screen Layout
	Quad ----------→	Setup ----------→	Edit Screen Layout
Buzzer	Enabled		
	DISABLED		
Buzzer Duration	Always		
	Timer--------→	***10*** (05 - 60 seconds)	
Alarm Snap	Enabled		
	DISABLED		

12.4.4.3.3 HDD Error

HDD/SD Error					
TITLE	OPTION No 1				
HDD/SD Error	***ENABLED***→	Alarm Type	***ALARM***		
	Disabled		Event		
		HDD Error Setup	Alarm Off-Delay	***7200*** (0~28800) seconds	
			Lock Alarm Off-Delay	***ENABLED***	
				Disabled	
		Alarm Link Setup	----------→	Channel	***TICK AVAILABLE CHANNELS***
				Audio	***TICK AVAILABLE CHANNELS***
				Audio Duration	NONE
					1 Min
					3 Min
					5 Min
					10 MIN
					15 Min
					30 Min
				Post Record	NONE
					1 Min
					3 Min

		5 Min		
		10 MIN		
		15 Min		
		30 Min		
	Lock	Enabled		
		DISABLED		
Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds	
	2----------→			
Channel Link	***NONE***			
	Single ----------→	Setup ----------→	Edit Screen Layout	
	Double----------→	Setup ----------→	Edit Screen Layout	
	Three----------→	Setup ----------→	Edit Screen Layout	
	Quad ----------→	Setup ----------→	Edit Screen Layout	
Buzzer	***ENABLED***			
	Disabled			
Buzzer Duration	Always			
	TIMER-------→	***10*** (05 - 60 seconds)		
Alarm Snap	Enabled			
	DISABLED			

12.4.4.4 AI (ADAS)

12.4.4.4.1 LDW

LDW						
TITLE	OPTION No.1					
LDW	***ENABLED***	Alarm Type	***ALARM***			
	Disabled		Event			
		Trigger	Level Speed Range	***45*** ~ ***70*** MPH		
			Secondary Speed Range	>= ***70***MPH		
			Sensitivity	Middle		
				LOW		
				High		
			Effective Time	***0*** (0~600) Seconds		
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***	
				Audio	***UNTICK AVAILABLE CHANNELS***	
				Audio Duration	None	
					1 MIN	
					3 Min	
					5 Min	
					10 Min	
					15 Min	
					30 Min	
				Post Record	None	
					1 MIN	
					3 Min	
					5 Min	
					10 Min	
					15 Min	
					30 Min	
				Lock	Enabled	
					DISABLED	
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
				2----------→		
			Channel Link	***NONE***		

		Single ----------→	Setup ---------→	Edit Screen Layout
		Double--------→	Setup ---------→	Edit Screen Layout
		Three--------→	Setup ---------→	Edit Screen Layout
		Quad ---------→	Setup ---------→	Edit Screen Layout
	Buzzer	***DISABLED***		
		Enabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	***ENABLED***		
		Disabled		
	Hazard Warning Unit Voice Enable	***ENABLED***		
		Disabled		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3
				4
				5
				6
				7
				8

12.4.4.4.2 FCW

FCW					
TITLE	OPTION No.1				
LDW	***ENABLED***	Alarm Type	***ALARM***		
	Disabled		Event		
		Trigger	Level Speed Range	***31*** ~ ***50*** MPH	
			Secondary Speed Range	>= ***50***MPH	
			Effective Time	***0*** (0~600) Seconds	
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***
				Audio	***UNTICK AVAILABLE CHANNELS***
				Audio Duration	None
					1 MIN
					3 Min

			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Post Record	None	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ---------→	Edit Screen Layout
		Double--------→	Setup ---------→	Edit Screen Layout
		Three--------→	Setup ---------→	Edit Screen Layout
		Quad ---------→	Setup ---------→	Edit Screen Layout
	Buzzer	***DISABLED***		
		Enabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	***ENABLED***		
		Disabled		
	Hazard Warning Unit Voice Enable	***ENABLED***		
		Disabled		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3
				4
				5
				6
				7
				8

12.4.4.4.3 HMW

HMW						
TITLE	OPTION No.1					
LDW	***ENABLED***	Alarm Type	***ALARM***			
	Disabled		Event			
		Trigger	Level Speed Range	***31*** ~ ***50*** MPH		
			Secondary Speed Range	>= ***50***MPH		
			Sensitivity	Low		
				Middle		
				High		
				User-Defined	***0.6*** (0.6 ~ 4) Seconds	
			Duration	***2.00*** (0.1 ~ 30) Seconds		
			Effective Time	***0*** (0~600) Seconds		
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***	
				Audio	***UNTICK AVAILABLE CHANNELS***	
				Audio Duration	None	
					1 MIN	
					3 Min	
					5 Min	
					10 Min	
					15 Min	
					30 Min	
				Post Record	None	
					1 MIN	
					3 Min	
					5 Min	
					10 Min	
					15 Min	
					30 Min	
				Lock	Enabled	
					DISABLED	
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
				2----------→		
			Channel Link	***NONE***		
				Single ----------→	Setup ---------→	Edit Screen Layout
				Double--------→	Setup ---------→	Edit Screen Layout
				Three--------→	Setup ---------→	Edit Screen Layout
				Quad ---------→	Setup ---------→	Edit Screen Layout
			Buzzer	***DISABLED***		
				Enabled		
			Buzzer Duration	***ALWAYS***		
				Timer--------→	10 (05 - 60 seconds)	
			Alarm Voice Enable	***ENABLED***		
				Disabled		
			Hazard Warning Unit Voice Enable	***ENABLED***		
				Disabled		
		Alarm Snap	Snap Mode	***MANY***		
			Number of Snap	0		
				1		
				2		
			Snap Interval	***5*** (5-3600) Seconds		
			Channel (Choose from 1 - 12)	***DISABLED***		

		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3
				4
				5
				6
				7
				8

12.4.4.4.4 PCW

PCW							
TITLE	OPTION No.1						
LDW	Enabled	Alarm Type	***ALARM***				
	DISABLED		Event				
		Trigger	Level Speed Range	***12*** ~ ***31*** MPH			
			Secondary Speed Range	>= ***31***MPH			
			Sensitivity	Low			
				MIDDLE			
				High			
				User-Defined	5 (0 ~ 60) Seconds		
			Effective Time	***0*** (0~600) Seconds			
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***		
				Audio	***UNTICK AVAILABLE CHANNELS***		
				Audio Duration	None		
					1 MIN		
					3 Min		
					5 Min		
					10 Min		
					15 Min		
					30 Min		
				Post Record	None		
					1 MIN		
					3 Min		
					5 Min		
					10 Min		
					15 Min		
					30 Min		
				Lock	Enabled		
					DISABLED		
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds	
				2----------→			
			Channel Link	***NONE***			
				Single ----------→	Setup ---------→	Edit Screen Layout	

		Double--------→	Setup ---------→	Edit Screen Layout
		Three--------→	Setup ---------→	Edit Screen Layout
		Quad ---------→	Setup ---------→	Edit Screen Layout
	Buzzer	***DISABLED***		
		Enabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	Enabled		
		DISABLED		
	Hazard Warning Unit Voice Enable	Enabled		
		DISABLED		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3
				4
				5
				6
				7
				8

12.4.4.5 AI (DFC)

12.4.4.5.1 Fatigue Driving

Fatigue					
TITLE	OPTION No.1				
Fatigue	***ENABLED***	Alarm Type	***ALARM***		
	Disabled		Event		
		Trigger	Level Speed Range	***19*** ~ ***100*** MPH	
			Secondary Speed Range	>= ***100*** MPH	
			Sensitivity	Low	
				Middle	
				High	
				USER-DEFINED	***15*** (10 ~255)*100ms
			Effective Time	***0*** (0~600) Seconds	
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***

		Audio	***UNTICK AVAILABLE CHANNELS***	
		Audio Duration	None	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Post Record	None	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ---------→	Edit Screen Layout
		Double--------→	Setup ---------→	Edit Screen Layout
		Three--------→	Setup ---------→	Edit Screen Layout
		Quad ---------→	Setup ---------→	Edit Screen Layout
	Buzzer	***DISABLED***		
		Enabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	***ENABLED***		
		Disabled		
	Hazard Warning Unit Voice Enable	***ENABLED***		
		Disabled		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3

	4
	5
	6
	7
	8

12.4.4.5.2 No Driver

No Driver						
TITLE	OPTION No.1					
No Driver	***ENABLED***	Alarm Type	***ALARM***			
	Disabled		Event			
		Trigger	Level Speed Range	>= ***30*** MPH		
			Sensitivity	Low		
				Middle		
				High		
				USER-DEFINED	***60*** (0 ~ 60) Seconds	
			Effective Time	***300*** (0~600) Seconds		
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***	
				Audio	***UNTICK AVAILABLE CHANNELS***	
				Audio Duration	None	
					1 MIN	
					3 Min	
					5 Min	
					10 Min	
					15 Min	
					30 Min	
				Post Record	None	
					1 MIN	
					3 Min	
					5 Min	
					10 Min	
					15 Min	
					30 Min	
				Lock	Enabled	
					DISABLED	
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
				2----------→		
			Channel Link	***NONE***		
				Single ----------→	Setup ---------→	Edit Screen Layout
				Double--------→	Setup ---------→	Edit Screen Layout
				Three--------→	Setup ---------→	Edit Screen Layout
				Quad ---------→	Setup ---------→	Edit Screen Layout
			Buzzer	***DISABLED***		
				Enabled		
			Buzzer Duration	***ALWAYS***		
				Timer--------→	10 (05 - 60 seconds)	
			Alarm Voice Enable	***ENABLED***		
				Disabled		
			Hazard Warning Unit Voice Enable	***ENABLED***		
				Disabled		
		Alarm Snap	Snap Mode	***MANY***		
			Number of Snap	0		
				1		
				2		
			Snap Interval	***5*** (5-3600) Seconds		

	Channel (Choose from 1 - 12)	***DISABLED***			
		Enabled-------→	FTP	***DISABLED***	
				Enabled	
			Resolution	***D1***	
				CIF	
				HD1	
				QCIF	
				QVGA	
				VGA	
				WCIF	
				WHD1	
				WD1	
				960P	
				WQCIF	
				720P	
				Q1081P	
				1080P	
			Quality	***1(Best)***	
				2	
				3	
				4	
				5	
				6	
				7	
				8	

12.4.4.5.3 Phone Call

Phone Call							
TITLE	OPTION No.1						
Phone Call	***ENABLED***	Alarm Type	***ALARM***				
	Disabled		Event				
		Trigger	Level Speed Range	***3*** ~ ***100*** MPH			
			Secondary Speed Range	>= ***100*** MPH			
			Sensitivity	Low			
				Middle			
				High			
				USER-DEFINED	***3*** (0 ~ 24) Seconds		
			Effective Time	***10*** (0~600) Seconds			
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***		
				Audio	***UNTICK AVAILABLE CHANNELS***		
				Audio Duration	None		
					1 MIN		
					3 Min		
					5 Min		
					10 Min		
					15 Min		
					30 Min		
				Post Record	None		
					1 MIN		
					3 Min		
					5 Min		
					10 Min		
					15 Min		
					30 Min		
				Lock	Enabled		
					DISABLED		
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds	
				2----------→			
			Channel Link	***NONE***			

		Single ----------→	Setup ---------→	Edit Screen Layout
		Double--------→	Setup ---------→	Edit Screen Layout
		Three--------→	Setup ---------→	Edit Screen Layout
		Quad ---------→	Setup ---------→	Edit Screen Layout
	Buzzer	***DISABLED***		
		Enabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	Enabled		
		DISABLED		
	Hazard Warning Unit Voice Enable	Enabled		
		DISABLED		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3
				4
				5
				6
				7
				8

12.4.4.5.4 Smoking

Smoking	
TITLE	OPTION No.1
Smoking	***ENABLED***
	Disabled

Alarm Type	***ALARM***		
	Event		
Trigger	Level Speed Range	***0*** ~ ***100*** MPH	
	Secondary Speed Range	>= ***100*** MPH	
	Sensitivity	Low	
		Middle	
		High	
		USER-DEFINED	***0*** (0 ~ 24) Seconds
	Effective Time	***0*** (0~600) Seconds	
Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***

		Audio	***UNTICK AVAILABLE CHANNELS***	
		Audio Duration	None	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Post Record	None	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ---------→	Edit Screen Layout
		Double--------→	Setup ---------→	Edit Screen Layout
		Three--------→	Setup ---------→	Edit Screen Layout
		Quad ---------→	Setup ---------→	Edit Screen Layout
	Buzzer	***DISABLED***		
		Enabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	Enabled		
		DISABLED		
	Hazard Warning Unit Voice Enable	Enabled		
		DISABLED		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3

	4
	5
	6
	7
	8

12.4.4.5.5 Driver Distraction

Driver Distraction							
TITLE	OPTION No.1						
Driver Distraction	***ENABLED***	Alarm Type	***ALARM***				
	Disabled		Event				
		Trigger	Level Speed Range	***19*** ~ ***100*** MPH			
			Secondary Speed Range	>= ***100*** MPH			
			Sensitivity	Low			
				Middle			
				High			
				USER-DEFINED	U/D Look	***3*** (0 ~60) Seconds	
					R/L Look	***5*** (0 ~60) Seconds	
			Judgement	***L+R+Up+Down***			
				L+R			
				Up+Down			
			Distraction Level	Light			
				MEDIUM			
				High			
			Effective Time	***0*** (0~600) Seconds			
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***		
				Audio	***UNTICK AVAILABLE CHANNELS***		
				Audio Duration	None		
					1 MIN		
					3 Min		
					5 Min		
					10 Min		
					15 Min		
					30 Min		
				Post Record	None		
					1 MIN		
					3 Min		
					5 Min		
					10 Min		
					15 Min		
					30 Min		
				Lock	Enabled		
					DISABLED		
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds	
				2----------→			
			Channel Link	***NONE***			
				Single ----------→	Setup ---------→	Edit Screen Layout	
				Double--------→	Setup ---------→	Edit Screen Layout	
				Three--------→	Setup ---------→	Edit Screen Layout	
				Quad ---------→	Setup ---------→	Edit Screen Layout	
			Buzzer	***DISABLED***			
				Enabled			
			Buzzer Duration	***ALWAYS***			
				Timer--------→	10 (05 - 60 seconds)		

	Alarm Voice Enable	***ENABLED***			
		Disabled			
	Hazard Warning Unit Voice Enable	***ENABLED***			
		Disabled			
Alarm Snap	Snap Mode	***MANY***			
	Number of Snap	0			
		1			
		2			
	Snap Interval	***5*** (5-3600) Seconds			
	Channel (Choose from 1 - 12)	***DISABLED***			
		Enabled-------→	FTP	***DISABLED***	
				Enabled	
			Resolution	***D1***	
				CIF	
				HD1	
				QCIF	
				QVGA	
				VGA	
				WCIF	
				WHD1	
				WD1	
				960P	
				WQCIF	
				720P	
				Q1081P	
				1080P	
			Quality	***1(Best)***	
				2	
				3	
				4	
				5	
				6	
				7	
				8	

12.4.4.5.6 Yawn

Yawn						
TITLE	OPTION No.1					
Yawn	***ENABLED***	Alarm Type	***ALARM***			
	Disabled		Event			
		Trigger	Level Speed Range	***3*** ~ ***100*** MPH		
			Secondary Speed Range	>= ***100*** MPH		
			Sensitivity	Low		
				Middle		
				High		
				USER-DEFINED	***2*** (0 ~60) Seconds	
			Effective Time	***180*** (0~600) Seconds		
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***	
				Audio	***UNTICK AVAILABLE CHANNELS***	
				Audio Duration	None	
					1 MIN	
					3 Min	
					5 Min	
					10 Min	
					15 Min	
					30 Min	
				Post Record	None	
					1 MIN	
					3 Min	
					5 Min	

				10 Min	
				15 Min	
				30 Min	
			Lock	Enabled	
				DISABLED	
		Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
			2----------→		
		Channel Link	***NONE***		
			Single ----------→	Setup ---------→	Edit Screen Layout
			Double--------→	Setup ---------→	Edit Screen Layout
			Three--------→	Setup ---------→	Edit Screen Layout
			Quad ---------→	Setup ---------→	Edit Screen Layout
		Buzzer	***DISABLED***		
			Enabled		
		Buzzer Duration	***ALWAYS***		
			Timer--------→	10 (05 - 60 seconds)	
		Alarm Voice Enable	***ENABLED***		
			Disabled		
		Hazard Warning Unit Voice Enable	***ENABLED***		
			Disabled		
	Alarm Snap	Snap Mode	***MANY***		
		Number of Snap	0		
			1		
			2		
		Snap Interval	***5*** (5-3600) Seconds		
		Channel (Choose from 1 - 12)	***DISABLED***		
			Enabled-------→	FTP	***DISABLED***
					Enabled
				Resolution	***D1***
					CIF
					HD1
					QCIF
					QVGA
					VGA
					WCIF
					WHD1
					WD1
					960P
					WQCIF
					720P
					Q1081P
					1080P
				Quality	***1(Best)***
					2
					3
					4
					5
					6
					7
					8

12.4.4.5.7 Seatbelt

Seatbelt						
TITLE	OPTION No.1					
Seatbelt	***ENABLED***	Alarm Type	***ALARM***			
	Disabled		Event			
		Trigger	Alarm Mode	***NORMAL MODE***--→	Effective Time	***180*** (0~600) Seconds
				Regular Inspection---→	Inspection Interval	***60*** (5 ~240) Minute

	Level Speed Range	***3*** ~ ***100*** MPH		
	Secondary Speed Range	>= ***100*** MPH		
	Sensitivity	Low		
		Middle		
		High		
		USER-DEFINED	***10*** (0 ~60) Seconds	
Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***	
		Audio	***UNTICK AVAILABLE CHANNELS***	
		Audio Duration	None	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Post Record	None	
			1 MIN	
			3 Min	
			5 Min	
			10 Min	
			15 Min	
			30 Min	
		Lock	Enabled	
			DISABLED	
	Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds
		2----------→		
	Channel Link	***NONE***		
		Single ----------→	Setup ---------→	Edit Screen Layout
		Double--------→	Setup ---------→	Edit Screen Layout
		Three--------→	Setup ---------→	Edit Screen Layout
		Quad ---------→	Setup ---------→	Edit Screen Layout
	Buzzer	***DISABLED***		
		Enabled		
	Buzzer Duration	***ALWAYS***		
		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	***ENABLED***		
		Disabled		
	Hazard Warning Unit Voice Enable	***ENABLED***		
		Disabled		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF

	WHD1
	WD1
	960P
	WQCIF
	720P
	Q1081P
	1080P
Quality	***1(Best)***
	2
	3
	4
	5
	6
	7
	8

12.4.4.5.8 Infrared Block Alarm

Infrared block alarm								
TITLE	OPTION No.1							
Infrared block alarm	***DISABLED***	Alarm Type	***ALARM***					
	Enabled		Event					
		Trigger	Level Speed Range	***12*** ~ ***31*** MPH				
			Secondary Speed Range	>= ***31*** MPH				
			Sensitivity	Low				
				MIDDLE				
				High				
				User-Defined	***5*** (0 ~60) Seconds			
			Effective Time	***0*** (0~600) Seconds				
		Alarm Link Setup	----------→	Channel	***UNTICK AVAILABLE CHANNELS***			
				Audio	***UNTICK AVAILABLE CHANNELS***			
				Audio Duration	None			
					1 MIN			
					3 Min			
					5 Min			
					10 Min			
					15 Min			
					30 Min			
				Post Record	None			
					1 MIN			
					3 Min			
					5 Min			
					10 Min			
					15 Min			
					30 Min			
				Lock	Enabled			
					DISABLED			
			Alarm O/P Link	1 ----------→	Alarm O/P Duration	***0*** (0~255) seconds		
				2----------→				
			Channel Link	***NONE***				
				Single ----------→	Setup ---------→	Edit Screen Layout		
				Double--------→	Setup ---------→	Edit Screen Layout		
				Three--------→	Setup ---------→	Edit Screen Layout		
				Quad ---------→	Setup ---------→	Edit Screen Layout		
			Buzzer	***DISABLED***				
				Enabled				
			Buzzer Duration	***ALWAYS***				

		Timer--------→	10 (05 - 60 seconds)	
	Alarm Voice Enable	Enabled		
		DISABLED		
	Hazard Warning Unit Voice Enable	Enabled		
		DISABLED		
Alarm Snap	Snap Mode	***MANY***		
	Number of Snap	0		
		1		
		2		
	Snap Interval	***5*** (5-3600) Seconds		
	Channel (Choose from 1 - 12)	***DISABLED***		
		Enabled-------→	FTP	***DISABLED***
				Enabled
			Resolution	***D1***
				CIF
				HD1
				QCIF
				QVGA
				VGA
				WCIF
				WHD1
				WD1
				960P
				WQCIF
				720P
				Q1081P
				1080P
			Quality	***1(Best)***
				2
				3
				4
				5
				6
				7
				8

12.4.5 Maintenance

12.4.5.1 Config

12.4.5.1.1 Config

Config	
TITLE	OPTION No 1
Config File Export	Export
Config File Import	Import
AI Config File Export	Export
AI Config File Import	Import
Import Ethernet HTTPS Certificate and Key	Import
Remove Ethernet HTTPS Certificate and Key	Clear
Import SMACON TLS Certificate and Key	Import
Remove SMACON TLS Certificate and Key	Clear

12.4.5.1.2 Network

Network	
TITLE	OPTION No 1
Network File Export	Export
Network File Import	Import

12.4.5.1.3 Geo-Fence

Geo-Fence	
TITLE	OPTION No 1
Geo-Fence File Export	Export
Geo-Fence File Import	Import

12.4.5.2 Metadata

12.4.5.2.1 Data Export

Data Export				
TITLE	OPTION No 1			
ALL	***ENABLED*** ---------→	File Type	***SNAPSHOTS***	Export
			GPS Data	
			G-Force Info	
			Mob Net Dial Log	
			Alarm Log	
			Operation Log	
			BlackBox Data	
			Debug Log Information	
	Disabled			
Export Time	Enabled ----------→	Start time	Date	yyyy-mm-dd
			Time	hh:mm:ss
		End time	Date	yyyy-mm-dd
			Time	hh:mm:ss
		File Type	***SNAPSHOTS***	Export
			GPS Data	
			G-Force Info	
			Mob Net Dial Log	
			Alarm Log	
			Operation Log	
			BlackBox Data	
			Debug Log Information	
	Disabled			

12.4.5.3 Upgrade

Upgrade				
TITLE	OPTION No 1			
FMW/MCU	Upgrade	Are you sure to Upgrade?		
IPC (IPC must be connected)	Upgrade	All	Enabled	Upgrade
			Disabled	
		Choose from the available IP Cameras	Enabled	Upgrade
			Disabled	
Hazard Warning Unit (HWU must be connected)	Upgrade	Choose from the available Hazard Warning Unit	Enabled	Upgrade
			Disabled	

12.4.5.4 Storage

Storage				
TITLE	OPTION No 1			
Storage Type	HDD			
	SD (Internal)			
	FPB SD			
	FRONT USB			
Free/Total	XXXX.X G			
Format	HDD	Format or Not?		
	SD (Internal)			
	FPB SD			
	FRONT USB	Format type	FAT32	Are you sure you would like to Format FRONT USB?
			MDR6	Less than 4GB
				Greater than 4GB

12.4.5.5 Reset

Reset		
TITLE	OPTION No 1	
Factory Settings	Restore	Are you sure to restore all the settings?
System Restart	Restart	Are you sure to Restart?

12.4.5.6 Certificate

Certificate		
TITLE	OPTION No 1	
Trusted Root Certificates (?)	Import	
Remove ALL Root Certificates	Remove	Are you sure you want to remove ALL root certificates? Warning: After removing, server connections will fail when verify certificate is enabled. Because there is no root certificate to check against.
Certificate Revocation Lists (?)	Import	
Remove CRLs	Remove	Are you sure you want to remove ALL CRLs? Warning: After removing, certificate revocation checking will be skipped when verify certificate is enabled. Because there is no CRL to check against.

12.5 LOGOUT

12.5.1 Logout Prompt

Logout Prompt	
TITLE	OPTION No 1
Are you sure to Logout?	***YES***
	No

13 MDR Audio Alerts Summary

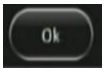
The MDR is embedded with various audio alerts files for different features and alarms. Details listed in table below:
Table 1: audio alerts when alarm has been triggered.

Alarm Type	Audio Alert Content (Level 1)	Audio Alert Content (Level 2)
Fatigue Driving	Fatigue warning, please rest now	Beep beep
No Driver	Beep, no driver	
Phone Call	Beep, phone detected	
Smoking	Beep, smoking detected	
Driver Distraction	Beep, driver distraction	
Yawn	Yawning, please drive carefully	
Seatbelt	Beep, please fasten seatbelt	
Infrared Block Alarm	Beep, please don't wear blocking glasses	
LDW	Beep, lane departure	
FCW	Collision warning, collision warning	
HMW	Beep, unsafe following distance	
PCW	Pedestrian warning, pedestrian warning	
Overspeed	Speed warning (pre-warn)	N/A
	Overspeed warning (official-warn)	
Privacy Mode (enable)	Privacy mode enabled	
Privacy Mode (disable)	Privacy mode disabled	
G-Force	Harsh acceleration	
	Harsh braking	
	Harsh cornering	

Table 2 audio alerts for normal operations.

Operation	Audio Alert Content
Privacy Mode	Privacy mode enabled
	Privacy mode disabled

14 Help Button

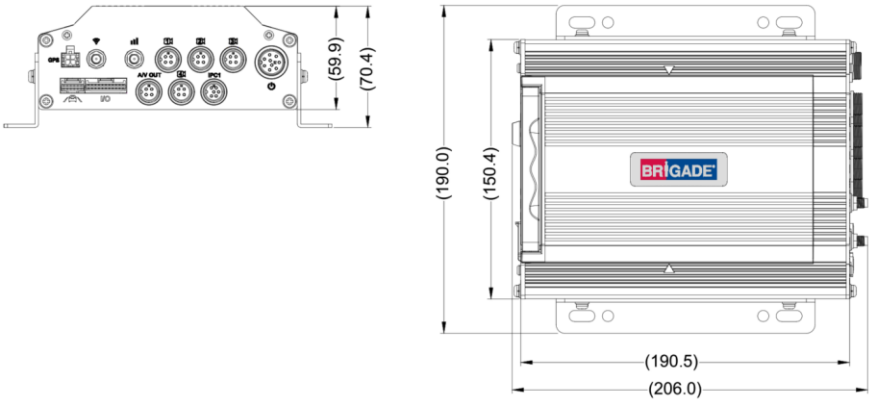
Main Menu	Sub Menu	Page	Tab Menu	Title	Open	Text	Close
SYSTEM INFO	-	Version Info	-	Serial Num		For Mobile Network / Wi-Fi MDR models: Serial Numbers are shown under MDR	
SETUP	Basic Setup	Time Setup	Time Sync	NTP sync		Only for Mobile network or Wi-Fi MDR units.	
SETUP	Basic Setup	Power	On/Off	On/Off Mode		Timer mode must not be used for extended periods of time - this will damage your vehicle's battery.	
SETUP	Basic Setup	Power	On/Off	Non-stop		Non-stop allows the MDR to record infinitely. Enabling this will disable Shutdown Delay Warning. Using the MDR for prolonged periods of time without ignition (vehicle running) can drain the vehicle's battery.	
SETUP	Basic Setup	Power	Sleep	Sleep Mode		Enable sleep mode to allow MDR automatic wake up after a certain period of time to support MDR-Dashboard client auto-download feature. Sleep Duration: Sleep duration before MDR completely shuts down after ignition off. Periodic Wake-up: After entered minutes of sleep, MDR will turn on automatically to start auto-download task.	
SETUP	Basic Setup	User Setup	-	Check Password		By ticking this box, the MDR will check the complexity of your login password. If the password is default or too simple a window will pop up after the MDR has started up and will ask you to change its password to be more complex. This will show every time the MDR starts up, a mouse is required to remove the notification each time.	
SETUP	Basic Setup	Network	Ethernet	DHCP Mode		Automatically obtains IP address from network.	
SETUP	Basic Setup	Network	Ports	Ethernet HTTPS		If enabled, the device will use HTTPS to communicate with the browser when accessing the Ethernet page.	
SETUP	Basic Setup	Network	Ports	SMACON TLS		If enabled, TLS encrypted communication will be used when	

					the user accesses the device via the Smartcontroller APP.	
SETUP	Basic Setup	Network	Server	Verify Certificate	If verify certificate is enabled, the device will check whether the server certificate is trusted when connecting to the server. If the server certificate is not trusted or expires, the device will disconnect from the server.	
SETUP	Surveillance	Record	General	Locked File Retention	This will ensure that alarms that are set as locked files will be stored for this time period. Locked files are automatically deleted once this period is over, regardless of remaining storage capacity.	
SETUP	Surveillance	Record	HDD	Record Mode	Timer prevents an MDR from turning Off - higher priority than on/off timer. This timer CANNOT control when an MDR turns ON.	
SETUP	Surveillance	Record	HDD	Record Rate	**I.Frame** MDR will record using one frame per second to save storage, but once an alarm is triggered, the MDR will record with the current frame rate. **Normal** MDR will record using the correct frame rate.	
SETUP	Surveillance	Record	Record OSD	Position	Choice of a maximum of 6 options.	
SETUP	Alarms	Advanced	Geo-Fence	Alarm Link Setup	Non-Stop allows the sensor output infinitely if the MDR is within the Geo-Fence region. Note: the region can be set in MDR-Dashboard 6.0 software.	
SETUP	Alarms	Advanced	Panic Bttn	Alarm-Off Delay	Alarm Off-Delay means that, if the same type of alarm triggers twice within the Alarm Off-Delay period, this will be considered as a single alarm.	
SETUP	Alarms	Advanced	HDD/SD Error	Lock Alarm Off-Delay	Assume that the “alarm duration” is set to 10 seconds. When the option is not checked, if the same alarm is triggered multiple times within 10 seconds, the effective time of the alarm will be extended. When the option is checked, if the same alarm is triggered multiple times within 10 seconds, the effective time will not be extended.	
SETUP	Alarms	AI	All AI alarms	Effective Time	(It has the same functionality as Alarm Off-Delay) Alarm Off-Delay means that, if the same type of alarm triggers twice within the Alarm Off-Delay period, this will be considered as a single alarm.	
SETUP	Maintenance	Certificate	Trusted Root Certificates		The root certificates are used to verify whether the TLS connection between the device and the server is trusted. The certificate format supports X.509.	
SETUP	Maintenance	Certificate	Certificate Revocation Lists		The CRL (Certificate Revocation List) is used to check whether a certificate is valid. The CRL format supports X.509.	

15 Mounting Dimensions

15.1 MDR-641XX-X-XX-XXX(XX)

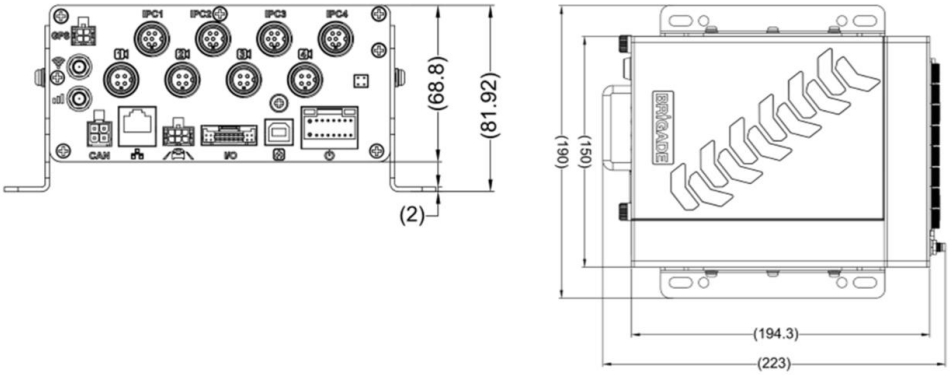
For mounting hole dimensions please refer to the MDR-BKT-02 drawing.



Bracket Position	MDR height from ground
1 (higher one on bracket)	17.5 mm
2 (lower one on bracket)	11.5 mm

15.2 MDR-644XX-X-XX-XXX(XX)

For mounting centre holes please refer to MDR-BKT-01 drawing.



Bracket Position	MDR height from ground
1 (highest on bracket)	29 mm
2	20 mm
3	12.5 mm
4 (lowest on bracket)	4.5 mm

16 Appendices

16.1 Video Quality Table

Using Brigade's Resource calculator, the below tables have been compiled. Please note the following:

- The values below are for reference only.
- Streaming bandwidth can vary, according to the level of variations in the image. Static images are more efficiently compressed than dynamic ones.
- Frame rates are assumed to be set to maximum which is 25fps for PAL and 30fps for NTSC.

Quality level		1 (Highest)	2	3	4	5	6	7	8 (Lowest)
Video Streaming Data Rate (Kbps) depending on resolution (H.264)	1080P (AHD)	8192	6390	5505	4068	3712	2818	1919	1024
	960P (AHD)	7987.2	6240	5366.4	4492.8	3619.2	2745.6	1872	998.4
	720P (AHD)	6144	4800	4128	3456	2784	2112	1440	768
	WD1	2662.4	1996.8	1664	1331.2	1170	1040	936	832
	D1	2048	1536	1280	1024	900	800	720	640
	WHD1	1996.8	1664	1331.2	998.4	832	728	650	585
	HD1	1536	1280	1024	768	640	560	500	450
	WCIF	1331.2	998.4	832	665.6	572	455	405.6	364

	CIF (Lowest)	1024	768	640	512	440	350	312	280
Video Streaming Data Rate (Kbps) depending on resolution (H.265)	1080P (AHD)	5734	4473	3847	3221	2596	1970	1344	717
	960P (AHD)	5591	4368	3756	3145	2533	1922	1310	699
	720P (AHD)	4301	3360	2890	2419	1949	1478	1008	538
	WD1	1597	1198	998	799	702	624	562	499
	D1	1331	998	832	666	630	560	504	448
	WHD1	1198	998	799	599	499	437	390	351
	HD1	998	832	666	538	448	392	400	360
	WCIF	799	599	499	399	343	273	243	218
	CIF (Lowest)	717	538	448	358	352	280	250	224

16.2 MDR Storage Calculator

For typical recording sizes for a one-hour duration and HDD recording times in hours versus storage capacity, please use the MDR storage calculator: https://brigade-electronics.com/mdr-hub/.

16.3 User Log Description

Reason	Example	Description
MDR Ignition	08:48:16 Power on Last power-off cause: Normal poweroff	MDR powers on and show the reason for the last shutdown: normal ignition off or time off
	10:10:19 Power on Last power-off cause: Low voltage reboot	MDR powers on and show the reason for the last shutdown: low voltage shutdown
	11:02:38 Power on Last power-off cause:ACC sleep	MDR powers on and show the reason for the last shutdown: Sleep session
	15:28:51 Low voltagePower off	
	22:30:55 ACCPower off	Ignition off, MDR shutdown
	22:33:43 HDD lockPower off	MCU lock open, MDR shutdown
MDR Recording	08:48:25 Channel1 Main record on	
	08:48:25 Channel1 Alarm record on	
	08:48:25 Channel1 Sub-record on	
MDR Setup Changed	08:50:15 Save configuration Surveillance->Live View->Preview User Name:admin	
	09:10:07 Save configuration Surveillance->Live View->Live OSD User Name:admin	
	10:05:13 Save configuration Alarms->Video->Motion Det User Name:admin	
	10:12:37 Save configuration Alarms->General->IO Alarm User Name:admin	
	10:30:13 Save configuration Surveillance->Record->HDD User Name:admin	
	10:34:59 Save configuration Basic Setup->Network->Server User Name:admin	
	10:35:34 Save configuration Surveillance->Record->SD User Name:admin	
	14:25:51 Reboot User Name:admin	
	15:21:40 Save configuration IPC Setup User Name:admin	
	15:28:50 Exporting User Name:admin	Export config file
	15:35:00 Importing User Name:admin	Import config file
	00:47:21 Format HDD User Name:admin	
	03:58:23 Adjust time:[2022-03-27 02:00:00] -> [2022-03-27 03:00:00]	
Alarms	09:10:07 09:11:15 Channel4 Motion Det.	
	09:12:38 09:11:15 IO1	
	09:15:17 09:11:15 Enter Polygon Area[test(1)]	Geo- Fence alarm triggered, area name: test, area type: polygon
	09:16:07 09:18:15 SD card failure	
	10:04:55 10:05:05 Channel2 Video loss	
	11:42:54 11:42:54 Low-voltage alarm	
	12:04:17 12:04:54 Blind Det.	

16.4 MDR-Dashboard 6.0 Silent Installation

MDD-Dashboard 6.0 supports silent installation using PowerShell switches. Follow the steps below to complete a silent installation:

Copy the installer to a directory, such as: C:\install\MDR-Dashboard_6.0_2.3.1.0.83.exe
Enter the PowerShell window
Run the command: C:\install\MDR-Dashboard_6.0_2.3.1.0.71.exe /VERYSILENT /SP-
You can also put the command in the batch file intall.bat and double-click install.bat to run it. An example is shown below

```
ECHO.
ECHO Installing MDR-Dashboard 6.0
ECHO Please wait...
start /wait %systemdrive%\install\MDR-Dashboard_6.0_2.3.1.0.71.exe /VERYSILENT /SP-
ECHO
ECHO Killing MDR-Dashboard_6.0_2.3.1.0.71.exe process
taskkill.exe /F /IM MDR-Dashboard_6.0_2.3.1.0.71.exe
ECHO
```

*If a software update is required, users can run “C:\MDR-Dashboard\unins000.exe /VERYSILENT /SP-” command to uninstall previous version first, then proceed to install the new version. Please be aware that during the uninstall process, there will be a prompt window to click yes/no to keep or delete history user configuration information.

16.5 MDR-Dashboard 6.0 Additional PowerShell Switches

SP-	Disables the “This will install... Do you wish to continue?” prompt at the beginning of the setup. This will have no effect if the DisableStartupPrompt [Setup] section directive was set to yes.
/SILENT, /VERYSILENT	Instructs Setup to be silent or very silent. When Setup is silent the wizard and the background window are not displayed but the installation progress window is. When a setup is very silent this installation progress window is not displayed. Other prompts display as normal, for example error messages during installation are displayed and the startup prompt is (if you haven’t disabled it with DisableStartupPrompt or the "/SP-" command line option explained above) If a restart is necessary and the "/NORESTART" command isn’t used (see below) and Setup is silent, it will display a Reboot now? messagebox. If it is very silent it will reboot without prompting.
/NORESTART	Instructs Setup not to reboot even if it is necessary.
/LOADINF="filename"	Instructs Setup to load the settings from the specified file after having checked the command line. This file can be prepared.
using the "/SAVEINF=" command as explained below. /SAVEINF="filename"	Instructs Setup to save installation settings to the specified file.
/DIR="x:\dirname"	Overrides the default directory name displayed on the Select Destination Directory wizard page. A fully qualified pathname must be specified. If the [Setup] section directive DisableDirPage was set to yes, this command line parameter is ignored.
/GROUP="folder name"	Overrides the default folder name displayed on the Select Start Menu Folder wizard page. If the [Setup] section directive DisableProgramGroupPage was set to yes, this command line parameter is ignored.
/NOICONS	Instructs Setup to initially disable the don"t create any icons check box on the Select Start Menu Folder wizard page.
/COMPONENTS="comma separated list of component names"	Overrides the default components settings. Using this command line parameter causes Setup to automatically select a custom.

16.6 Events Table

The following table illustrates the type of events recorded. This is illustrated in the event list search of the MDR and MDR-Dashboard 6.0.

Event Type	Event Name	Description
Video Loss	VL	Video loss alarm (e.g., the camera has been either deliberately or inadvertently disconnected).
Blind Detection	BD	Blind camera alarm (e.g., the camera has been intentionally obstructed, or a large object is obstructing the entire view).
Motion Detection	MD	Motion detection for video capturing when vehicles are unattended.
Triggers	Name of the Trigger (e.g., IO1, IO2 etc. or PB for Panic Button)	GPIO (general purpose input/output) trigger sensor alarm.
Speed Alarm	H-Speed	Overspeed can be flagged and recorded.
Geo-Fence	Geo-Fence	Geo-Fence alarm can be flagged and recorded when vehicle in / out a set area.
G-Force	G-Force	Excessive G-Force can be flagged and recorded.
HDD/SD Error	HDD/SD Error	Storage (HDD, SSD, SD card) damage can be flagged.

17 Testing and Maintenance

17.1 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 remote control should be strictly used by technically trained operators 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 working as intended.
3) Operators using this equipment are strongly recommended to check the system’s operation at the beginning of every shift.
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 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.

17.2 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 Brigade monitor is connected).

18 General Antenna Guidelines

(a) Ensure that the cable is:
- properly secured, but not strained or distorted
- routed in such a way as to avoid sharp bends
- not run in parallel with vehicle wiring wherever possible
- routed as far away as possible from any electronic module

(b) Excess coaxial cable should not be coiled up as this may affect the tuning of the antenna as well as producing electrical interference. Excess cable should be laid out over a larger area to avoid potential coiling.
(c) Before connection to the equipment the antenna system should be DC tested at the equipment end of the coaxial cable for continuity and to ensure there is no short circuit.
(d) Antenna positions should be planned to achieve best separation between antennas while maintaining a suitably sized ground plane for each one. Each antenna should be separated by at least 50cm where possible. This includes antenna already fitted to the vehicle, e.g., radio, phone and GPS devices. Antenna should be tightly installed preferably on the roof or a place near the window to guarantee signal strength. Please do not put antenna in an enclosed or half-enclosed space around metal which may obstruct reception.
(e) Record and playback a short section to check recordings do not have or cause interference. EMC issues may cause interference to in-car entertainment equipment or other vehicle electrical equipment. Also, the antenna may pick up noise received from the vehicle or other fitted role equipment such as light bars, GPS processors and other digital (computing) equipment and present it to the radio equipment as interference. Repositioning may be required.

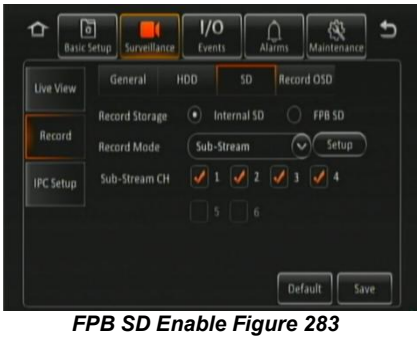
19 Troubleshooting

19.1 MDR Unit

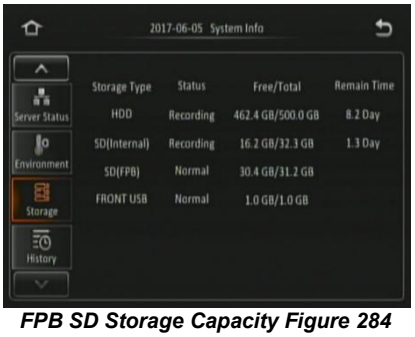
Scenario	Detection	Resolution
Loss of recording data	1. Error light will be visible on the MDR unit LED panel 2. Error light will be shown on the Remote panel 3. If the sound buzzer is activated or a audio buzzer is connected to one of the trigger outputs, an audible alarm can alert drivers	1. SD card is used to recover data – see the manual for recording options 2. Requires the LED panel of the MDR or a remote panel to always be visible to driver 3. The audio buzzer should be activated and configured to alert drivers to errors.
System Power loss	1. Error light will be visible on the MDR unit LED panel and power LED will turn off	1. Vehicle Battery should be replaced if it is suspected of malfunctioning 2. Low Voltage protection feature should be turned on 3. Fuses may be blown and may need to be replaced
Data Corruption due to Power loss	1. Error light will be visible on the MDR unit LED panel and power LED will turn off	1. MDR is powered for few minutes after power loss to enable closure of recording files
Video Loss	1. Video loss LED will turn on which is found on the MDR and the Remote panel 2. If the audio buzzer is activated or an audio buzzer is connected to one of the trigger outputs, an audible alarm can alert drivers	1. If possible, cables should not be installed in an area where these can be tampered with 2. Ensure cable connectors are secure before driving
No recording on SD or HDD / SSD	1. Error light will be visible on the MDR unit LED panel 2. Error light will be shown on the Remote panel 3. If the audio buzzer is activated or an audio buzzer is connected to one of the trigger outputs, an audible alarm can alert drivers	1. Ensure that the Overwrite feature is turned on 2. Install larger capacity HDD / SSD or 256GB SD card
MCU failure	1. Visible Physical Damage and unable to connect on PC	1. Retain a backup MCU for a vehicle 2. Ensure supplied USB cable is used 3. Ensure PC is fully up to date with Windows updates and drivers are installed
Failure due to Environment	1. Error light will be visible on the MDR unit LED panel 2. Error light will be shown on the Remote panel 3. HDD recording cannot begin (HDD LED not ON)	1. Driver should wait a few minutes for the internal heater to heat the HDD to above 10°C – this will then start to record
Docking Station Failure	1. No visible power LED is on	1. Ensure the MCU KEY is locked 2. Ensure that wires that are being used are protected by heat shrink
HDD inconsistent functionality (HDD Repair)	1. Error light will be visible on the MDR unit LED panel 2. Error light will be shown on the Remote panel	1. Customers must follow the MCU removal procedure as stipulated in the manual

19.2 MDR Fireproof Box

- When you connect a Fireproof box to the MDR. This needs to be enabled in the OSD. Go to Surveillance > Record > SD > FPB SD.
- The MDR may restart to engage this new hardware device.
- All new fireproof boxes must be formatted before use.
- Please follow the below steps to do this:
  - Format as FAT32 first so the correct storage capacity displays
  - Then format as MDR6 so the MDR can record to this storage
- The process above will never have to be repeated
- Finally confirm storage under system information, it should show under SD(FPB) as 31.2GB.



FPB SD Enable Figure 283



FPB SD Storage Capacity Figure 284

20 Specifications

Features

Video System	MDR-641: PAL / NTSC / AHD MDR-644: PAL / NTSC / AHD / TVI
Video Input	MDR-641: 4x Channels for analogue cameras - Select Connector 1x Channels for IP cameras - Select Connector MDR-644: 4x Channels for analogue cameras - Select Connector 4x Channels for IP cameras - Select Connector 4x Channels for IP cameras via Ethernet Connector, requires PON switch
Video Output	1x Channel - Select Connector
Video Compression	H.264 / H.265
Setup or Control	USB Mouse and PC via browser (Ethernet)
Display Split	Single, Quad or 9-Split
Audio Input	MDR-641: 4x Channels for analogue cameras - Select Connector 1x Channels for IP cameras - Select Connector MDR-644: 4x Channels for analogue cameras - Select Connector 4x Channels for IP cameras - Select Connector 4x Channels for IP cameras via Ethernet Connector, requires PON switch
Audio Output	1x Channel - Select Connector
On-Screen Display	GPS information, alarm, temperature, acceleration, voltage, firmware version, MCU version, device information, network information, storage information
Operation Interface	OSD Graphical User Interface
Image View	Normal View, Mirror View or Flip Vertical per channel
Installation Direction	Any mounting direction (Internal HDD anti-vibration mount) except for MDR-641 with CMR HDD which must be installed horizontally.
Image Frame Rate Minimum - Maximum	1-25 FPS (PAL); 1-30 FPS (NTSC); 1-30 FPS (IP Camera dependent)
Image Resolution	PAL: WD1 (960x576), D1 (704x576), WHD1 (960x288), HD1 (704x288), WCIF (480x288), CIF (352x288) NTSC: WD1 (960x480), D1 (704x480), WHD1 (960x240), HD1 (704x240), WCIF (480x240), CIF (352x240) AHD: HD (1280x720), FULL HD (1920x1080) IP Camera: HD (1280x720), FULL HD (1920x1080) configurable for each channel
Image Quality	1-8 Adjustable Levels (1 is the Best)
Recording Mode	Normal, Alarm, Timer
Power-up Time to Recording	60 Seconds minimum
Mirror Recording	MDR-641: No MDR-644: Yes, on SD Card
Playback of Recordings	1 Channel at a time using MDR video output to monitor Configurable Channels using MDR-Dashboard 6.0 / MDR-Player 6.0 / MDR 6.0 Apps / SmartController Apps / PC via browser (Ethernet)
File Search Mode Options via OSD	Date/Time/Channel/File Type
Built-in Heater (Power / Ambient Temperature Threshold for On/Off)	At -25°C HDD / SSD records after approx. 11 minutes At any temperature the SD card starts recording after a minimum of 60 seconds from power-up
Built-in GPS	GPS location tracking, speed detection and sync time
Built-in Buzzer	MDR-641: No MDR-644: Yes
Built in G-Sensor	Yes
Network Protocols Supported	TCP/IP, UDP, DHCP (client only), TFTP, FTP (server and client), HTTP/HTTPS (server and client), SNTP (server and client) ONVIF (server and client), RTSP (server and client)

Network Interface

Mobile Standards	Worldwide Excluding North America Models: 2G/3G/4G [Variants that contain "G" or "GW" in its model number] North American Models: 3G/4G [Variants that contain "G" or "GW" in its model number]
Mobile Operating Bands	Worldwide Excluding North America Models: 4G (FDD LTE): B1, B3, B7, B8, B20, B28A, all bands with receive diversity 3G (WCDMA/HSPA+/HSPA/DC-HSPA+): B1, B8, all bands with receive diversity 2G (GPRS/GSM/EDGE): 900/1800 MHz [Variants that contain "G" or "GW" in its model number] North American Models: 4G (FDD LTE): B2, B4, B5, B12, B13, B14, B66, B71, all bands with diversity 3G (WCDMA/HSPA+/HSPA/DC-HSPA+): B2, B4, B5, all bands with diversity [Variants that contain "G" or "GW" in its model number]
Mobile Data Services	Worldwide Excluding North America Models: GPRS: UL 85.6 kbit/s; DL 107 kbit/s EDGE: UL 236.8 kbit/s; DL 296 kbit/s WCDMA: UL 384 kbit/s; DL 384 kbit/s HSUPA: UL 5.76 Mbit/s DC-HSPA: DL 42 Mbit/s LTE FDD: UL 50 Mbit/s; DL 150 Mbit/s [Variants that contain "G" or "GW" in its model number]

	North American Models: WCDMA: UL 384 kbit/s; DL 384 kbit/s HSUPA: UL 5.76 Mbit/s DC-HSPA: DL 42 Mbit/s LTE FDD: UL 50 Mbit/s; DL 150 Mbit/s [Variants that contain "G" or "GW" in its model number]
SIM Card Type	DATA ENABLED [Variants that contain "G" or "GW" in its model number]
SIM Card Size	Standard [Variants that contain "G" or "GW" in its model number]
Wi-Fi Standard	802.11a/b/g/n/ac for 2.4GHz and 5GHz [Variants that contain "W" or "GW" in its model number]
Maximum Wi-Fi Transmission Rate	130Mbps for 20MHz, 150Mps for 40MHz, 433 Mbps for 80 MHz channel operations [Variants that contain "W" or "GW" in its model number]
Wi-Fi Security Standards	WEP 64/128, WPA, WPA2, TKIP, AES, WAPI [Variants that contain "W" or "GW" in its model number]

Windows Software

File Download via	USB 3.0 (Mobile Caddy Unit) using MDR-Dashboard 6.0, USB 2.0 Flash drive with FAT32 format (Docking Station),

Mobile Applications

Android Operating System	Brigade MDR 6.0 MDR SmartController
iOS Operating System	Brigade MDR 6.0 MDR SmartController

Connections/Interfaces

Network Ethernet	MDR-641: No MDR-644: RJ45 port (10/100M) (For IP camera 4-port PON switch or MDR configuration using Ethernet Menu on PC)
USB-A Interface Front Docking Station	USB 2.0 x 1 used for exporting, upgrading and configurations USB Flash Drives: Maximum 256GB, 5V and 500mA (3.5" external desktop or bigger HDDs are not supported due to power supply is exceeded)
USB-B Interface Rear Docking Station	MDR-641: No MDR-644: USB 2.0 x 1 - Connect to Fireproof Box
USB-A Interface Mobile Caddy Unit	MDR-641: USB 3.0 x1 – Connect to MCU Reader
USB-B Interface Mobile Caddy Unit	MDR-644: USB 3.0 x 1 - Connect to PC
Serial Interface	MDR-641: RS232 x 1 Connector (can be transferred to RS485 to support Remote Panel) MDR-644: RS485 x 1 Connector (Remote Panel) via multi-pin connector
Input/Output, Power Output	MDR-641: 8x Trigger Inputs, 2x Trigger Outputs, 1x 5V OUT, 1x GND, 1x Speed Signal and 1x Speed GND via multi-pin connector MDR-644: 8x Trigger Inputs, 2x Trigger Outputs, 1x 12V OUT, 1x GND, 1x Speed Signal and 1x Speed GND via multi-pin connector
CAN Bus	Not currently available, for future use

Mechanical Specification

Dimensions typ. Assembly (W x H x D in mm) including brackets	MDR-641: 190mm x70mm x 206mm MDR-644: 190mm x 82mm x 223mm
Weight of Installed Unit	MDR-641: approx. 2.1kg MDR-644: approx. 2.7kg

Electrical Interface

Operating Voltage (min. / typ. / max.)	8.5V /12V / 32V (without any cameras and any accessories)
Current Consumption (min. / typ. / max. per mode)	MDR-641: 0.30A (stable @ 24V) / 0.53A (stable @ 12V) (without cameras and MCU heater off) 0.45A (stable @ 24V) / 1.02A (stable @ 12V) (camera IR off and HDD heater off) 0.91A (stable @ 24V) / 1.80A (stable @ 12V) (camera heaters on and MCU heater on) Tested with BE-800C cameras MDR-644: 0.42A (stable @ 24V) / 0.74A (stable @ 12V) (without cameras and MCU heater off) 0.73A (stable @ 24V) / 1.40A (stable @ 12V) (camera IR off and HDD heater off) 2.6A (stable @ 24V) / 5.35A (stable @ 12V) (camera heaters on and MCU heater on) Tested with BE-800C cameras
Inrush Current (min. / typ. / max. per mode)	MDR-641: Inrush Current (min. / typ. / max. per mode) 0.89A (inrush @ 24V) / 1.40A (inrush @ 12V) (without cameras and MCU heater off) 1.40A (inrush @ 24V) / 2.80A (inrush @ 12V) (camera heaters off and MCU heater off) 1.83A (inrush @ 24V) / 3.88A (inrush @ 12V) (camera heaters on and MCU heater on) Tested with BE-800C cameras MDR-644:

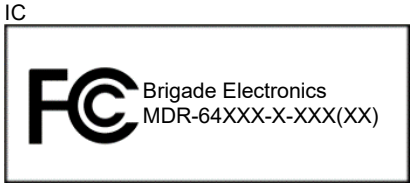
	1.61A (inrush @ 24V) / 3.36A (inrush @ 12V) (without cameras and MCU heater off) 1.73A (inrush @ 24V) / 3.65A (inrush @ 12V) (camera heaters off and MCU heater off) 2.71A (inrush @ 24V) / 6.07A (inrush @ 12V) (camera heaters on and MCU heater on) Tested with BE-800C cameras
Trigger Inputs	8x (approx. 9.0V threshold input voltage)
5V Output	1x 4.2V @ 1.74A Maximum Load (MDR-641 only)
12V Output	1x 12V @ 2.45A Maximum Load (MDR-644 only)
Alarm Outputs	MDR-641: 2x 11.0V at 293mA Maximum Load MDR-644: 2x 11.5V at 500mA Maximum Load
Maximum Camera Supply Current	600mA

Test and Environmental Specification

RoHS2 Compliance	Yes
REACH Compliance	Yes
Operating Temperature Range	CMR: -40°C to +50°C SSD: -40°C to +70°C
Storage Temperature Range	-40°C to +85°C
Vibration Rating	SSD: 3.1G CMR: 1.5G
Shock Rating	51G
Ingress Protection	IP30
Operating Relative Humidity	10% to 90%

21 Approvals

CE
UKCA
UNECE Regulation No. 10 Revision 5 (“E-marking”)
FCC
IC



FCC Statement:

This device complies with part 15, 22, 24, 27 & 90 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Wi-Fi FCC ID: 2ACOE-WG217
Mobile Network FCC ID: XMR201808EC25AF

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

ISED Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Wi-Fi IC ID: 20742-WG2175ES
Mobile Network IC ID: 10224A-2018EC25AF

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada’s licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes au (x) RSS (s) exemptés de licence d'Innovation, Sciences et Développement économique Canada. L'opération est soumise aux deux conditions suivantes:
(1) Cet appareil ne doit pas provoquer d'interférences.
(2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

EU Declaration of Conformity:

Hereby, Brigade Electronics Group PLC declares that the radio equipment type Mobile Digital recorder system with model numbers MDR-644XX-X-XXX and MDR-641XX-X-XXX are in compliance with Directive 2014/53/EU and Regulation S.I. 2017/1206.

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

22 Glossary

3G – Third Generation
4G – Fourth Generation
AC – Adaptor Cable
ADAS – Advanced Driving Assistant System
ADPCM – Adaptive Differential Pulse-code Modulation
AI – Artificial Intelligence
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
CRL - Certificate Revocation List
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
FPB – Fireproof box
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
HMW – Headway Monitoring
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
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
LED – Light Emitting Diode
LDW – Lane Departure Warning
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
PCW – Pedestrian Collision Warning
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
TLS - Transport Layer Security
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

23 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.

Declinación de responsabilidad
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 urządzenia 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.