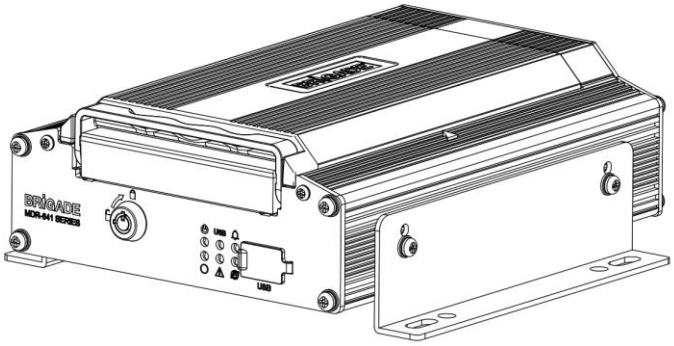
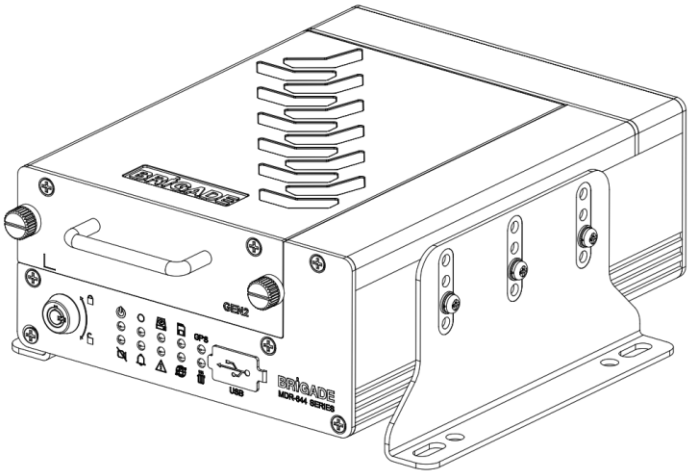
Mobile Digital Recorder

MDR 600 Series

MDR-641XX-X-XXX(XX)



MDR-644XX-X-XXX(XX)



Short Installation and Operation Guide

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

Table of Contents

Note: *Chapters with * can be found in the MDR-64XXX-X-XXX(XX) (Various) Installation & Operation Guide, please download from* www.brigade-electronics.com.

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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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 644 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 641 Series 5 Channel Control Unit with 500GB / 1TB / 2TB SSD or HDD, 4G & Wi-Fi (depending on model)

2.1.3 Common Accessories

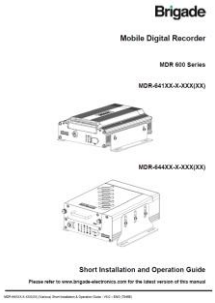
MDR GPS Antenna
MDR-ANT-GPS-03

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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

2.2.2 MCU Reader*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

2.2.3 MDR SmartController*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

2.2.4 Adapter Cables*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

2.2.5 Optional Secondary Storage Medium*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

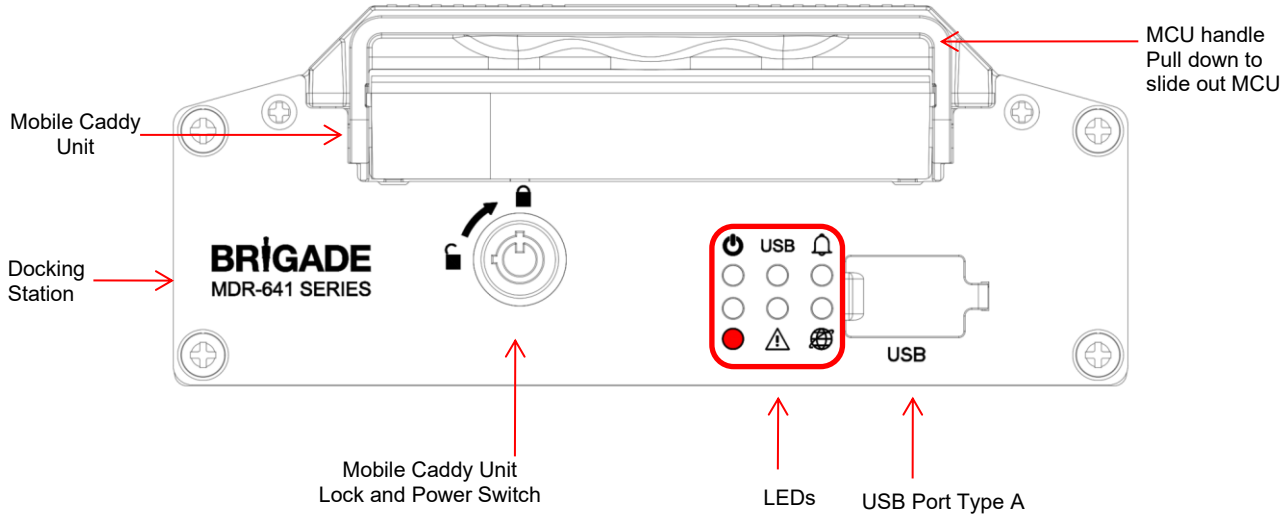
3 Hardware Installation

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

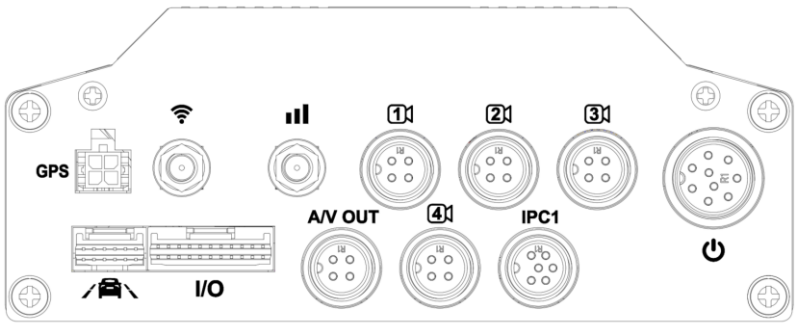
Alarm - Red LED
ON: When an alarm is triggered, lasts for entire alarm duration
OFF: Alarms not triggered or only events have been triggered

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

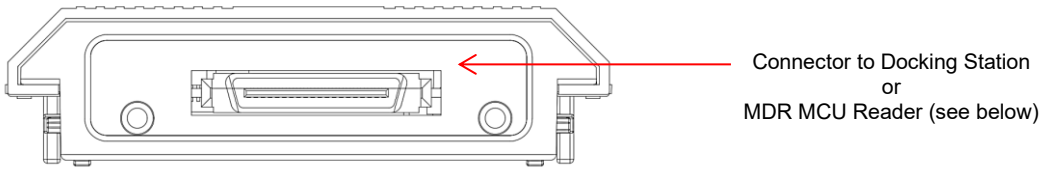


MDR-641XX-X-XXX(XX) Rear View Figure 2

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

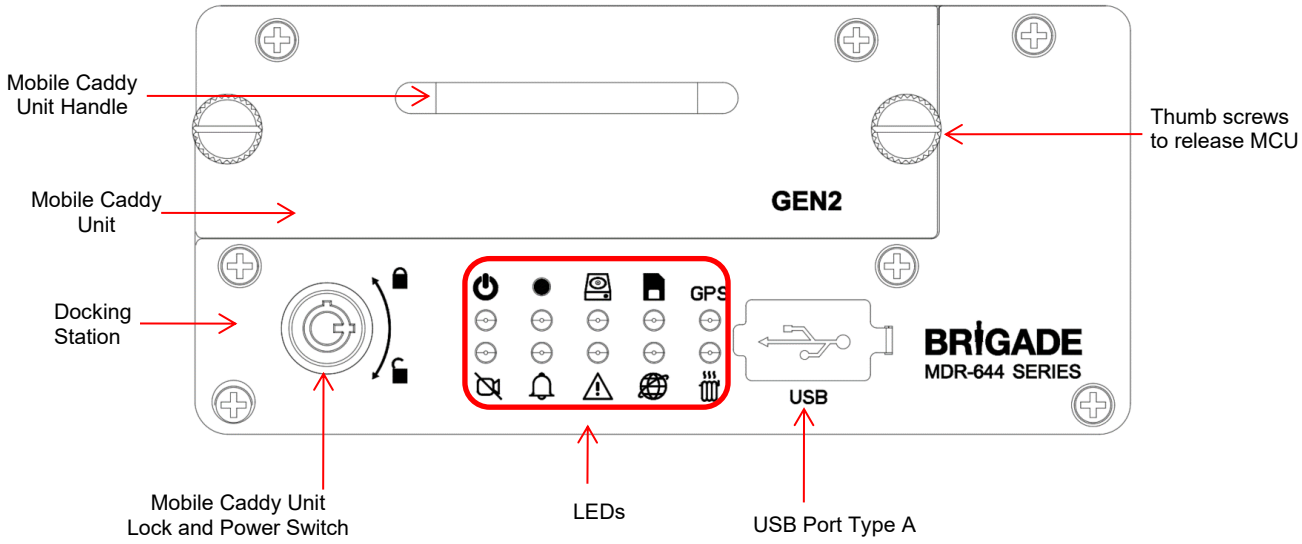


MDR-641-X-MCU-XXX Figure 3

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

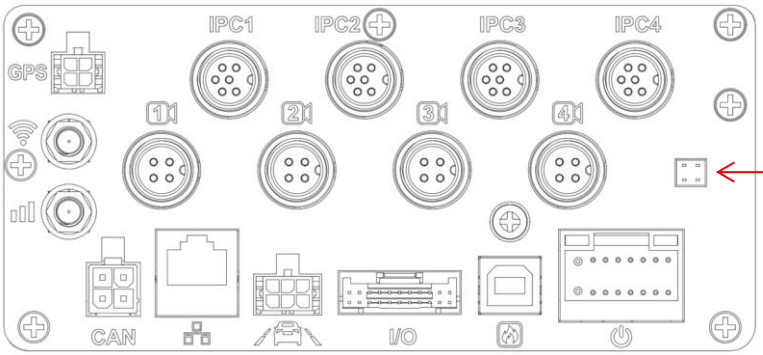
Recording – Yellow LED
Flashing: HDD recording
OFF: HDD not recording

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

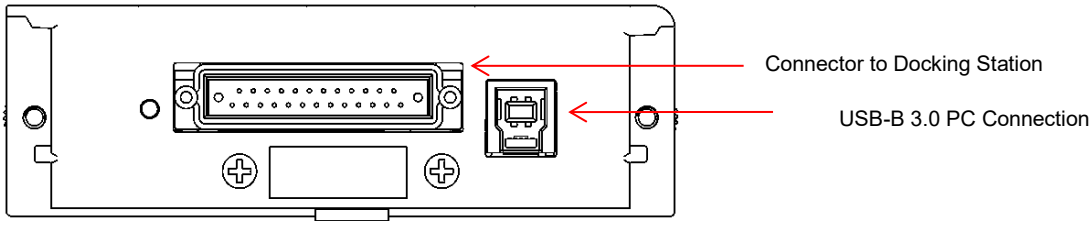


MDR-644XX-X-XXX(XX) Rear View Figure 6

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



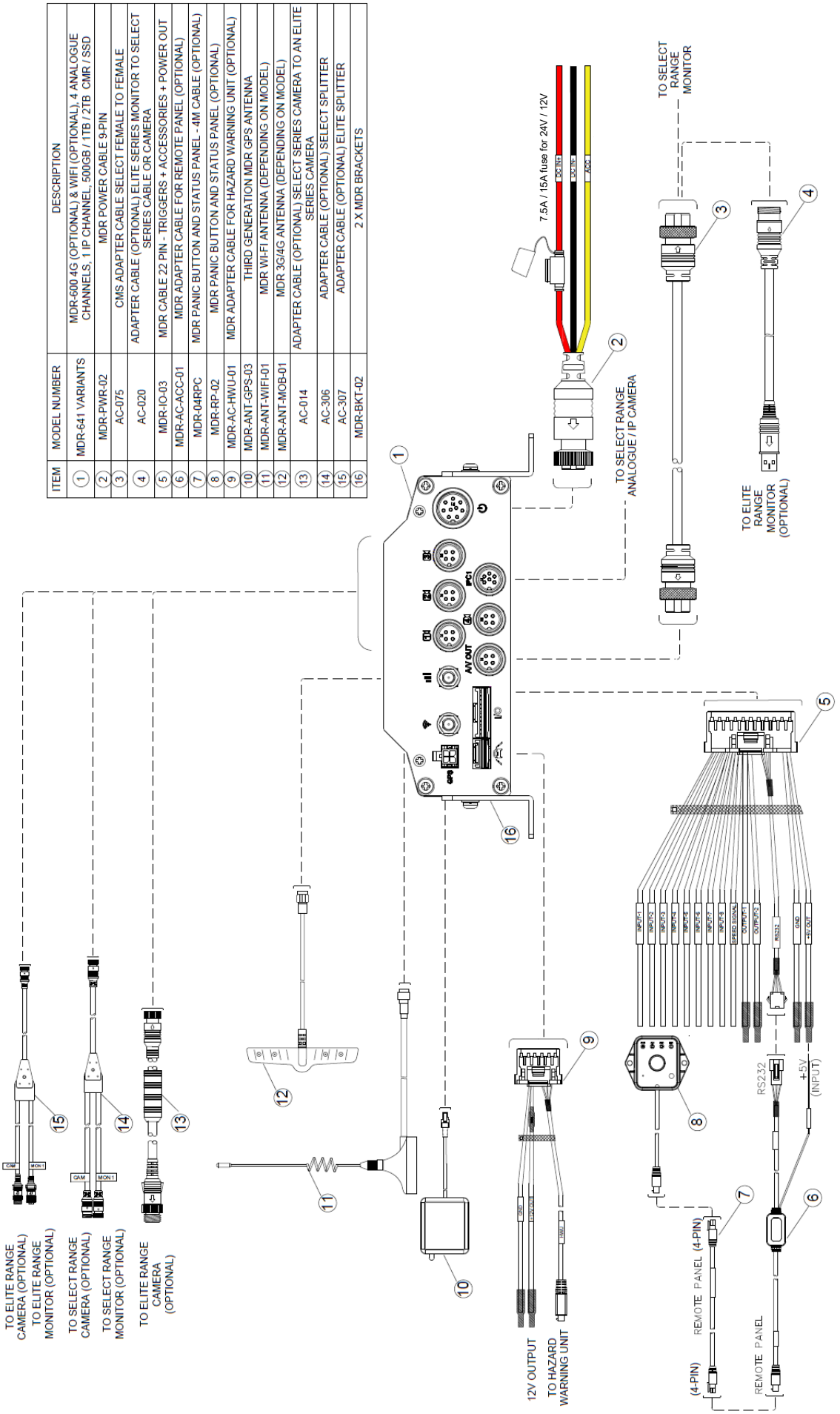
MDR-644-X-MCU-XXX Figure 7

3.3 USB Mouse

MDR-MOUSE-01 Figure 8

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

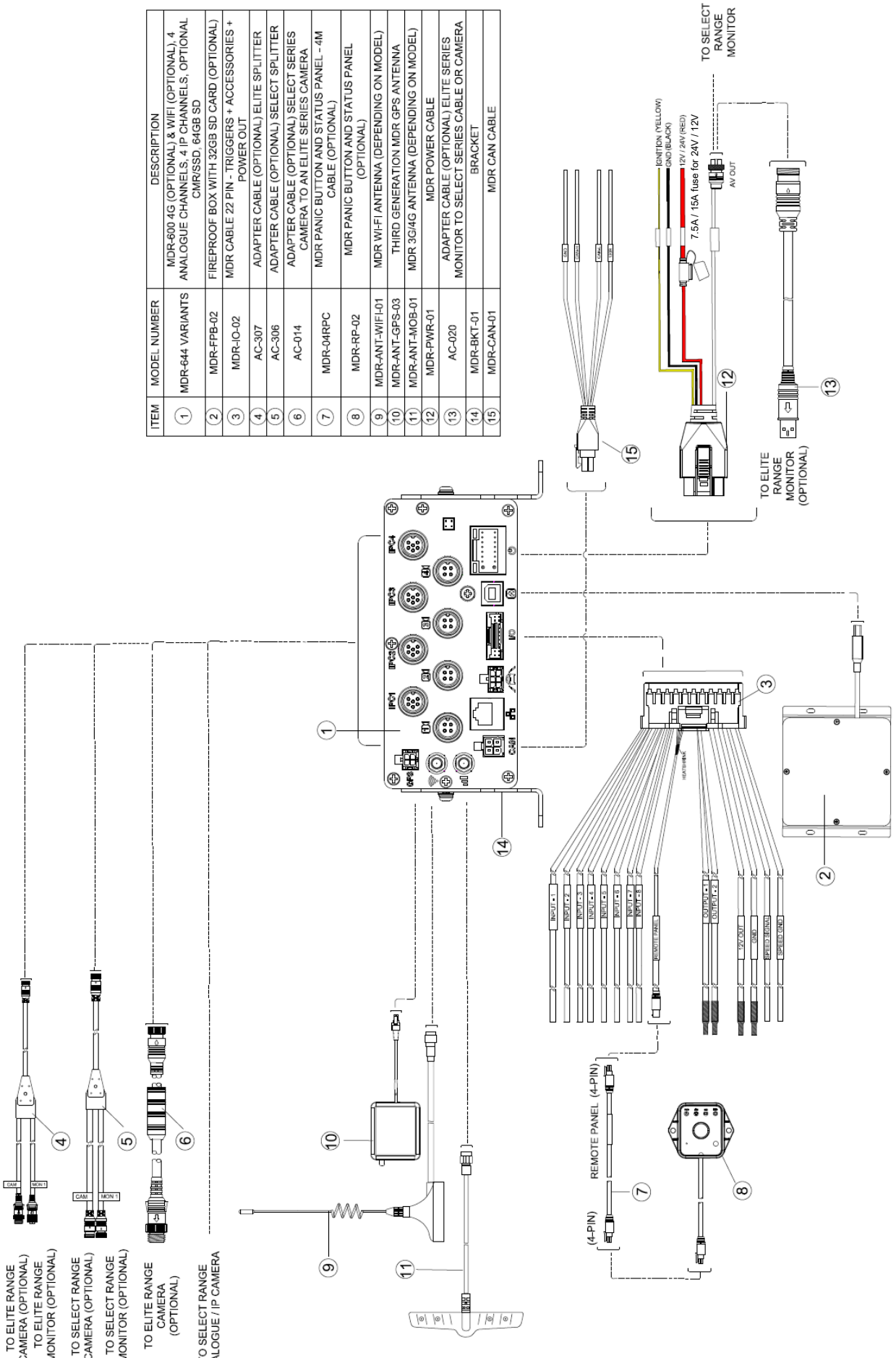
ITEM	MODEL NUMBER	DESCRIPTION
1	MDR-641 VARIANTS	MDR-600 4G (OPTIONAL) & WIFI (OPTIONAL), 4 ANALOGUE CHANNELS, 1 IP CHANNEL, 500GB / 1TB / 2TB CMR / SSD
2	MDR-PWR-02	MDR POWER CABLE 9-PIN
3	AC-075	CMS ADAPTER CABLE SELECT FEMALE TO FEMALE
4	AC-020	ADAPTER CABLE (OPTIONAL) ELITE SERIES MONITOR TO SELECT 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*: Failure to follow the MCU removal steps below will damage the HDD. Ensure that the PWR LED is OFF prior to MCU removal. Different MDR generations use incompatible file systems. To avoid recording loss, ensure to format HDD/SD card after swapping between MDR generations.**

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

Step 1
Unlock the MCU using the key

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

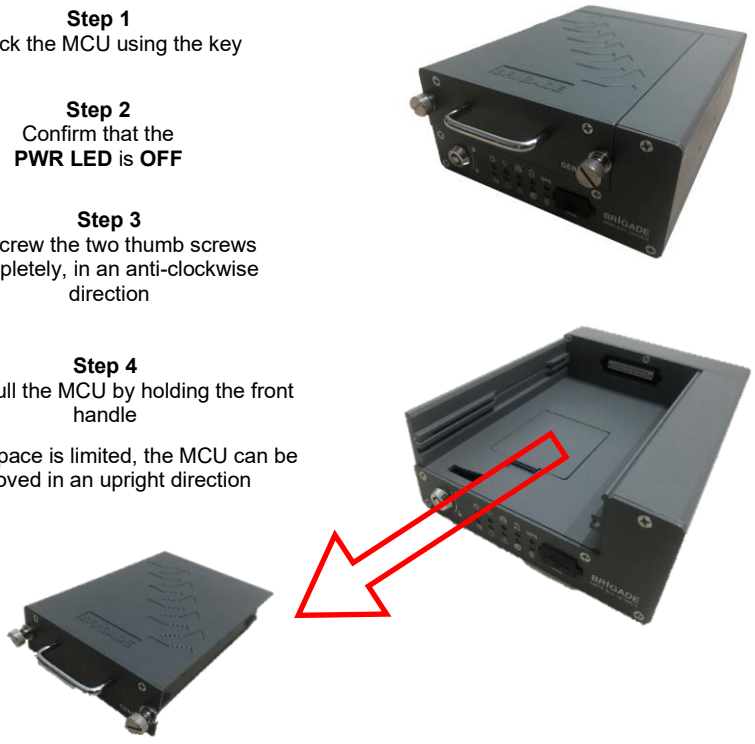
Step 1
Unlock the MCU using the key

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

Step 3
Unscrew the two thumb screws completely, in an anti-clockwise direction

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

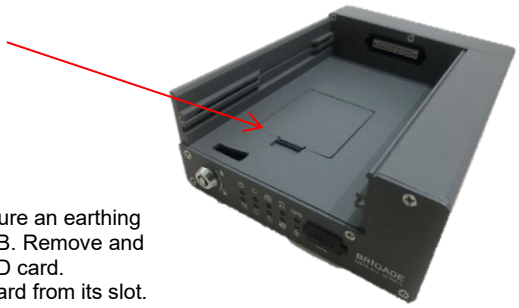
SD Card removal for MDR-644XX-X-XXX(XX) Figure 13)

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 an SD card slot. Ensure an earthing strap is worn to prevent any damage to the PCB. 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 door 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 door 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

For detailed information regarding the installation of mobile radio and related ancillary equipment in land-based vehicles, see FCS1362:2016 UK CODE OF PRACTICE. Please see Appendix Chapter 18 General Antenna Guidelines for more information.

3.9.1 GPS antenna Installation

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

Clean vehicle body area and magnetic-mount antenna base before fitting, to avoid damage to vehicle paintwork.

- Magnetic-mount antenna must be mounted on a flat area of steel body panel.
- To maximise magnetic-mount strength and Wi-Fi signal integrity, do not insert any materials between the antenna base and vehicle body (other than antenna's protective pad)

3.9.3 Mobile Network antenna

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 to ensure data integrity.

If file errors or bad sectors are detected during disk-checking, the MDR will attempt to repair these 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 ignition is switched on, the MDR displays quad view of Channels 1 – 4 by default. See *Start-up Screen Figure 17*.

Right click the mouse to show the Quick Menu. 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 *Quick Menu Figure 18*, *Single View Figure 19* and *9-Split View Figure 20.* MDR supports multiple channel group views, which may be accessed and cycled through by repeatedly pressing the Single / Quad / 9-Split buttons.

Playback supports instant playback of recordings. Login details and HDD Key (if set) are required to access this feature.

Note: In Quick Menu, Playback of recording starts from 2 minutes ahead of current time. If the MDR does not have any recording during that period, the Playback function will fail and show the following warning message: "Failed to open playback stream segment!" It is recommend to use the Playback feature in Chapter *6 Record Search* to access full recordings.

Sys Info will be covered in Chapter 8 System Information.

Start-up Screen Figure 17

Quick Menu Figure 18

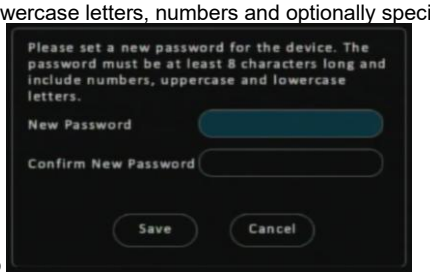
Single View Figure 19

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.

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.

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.**

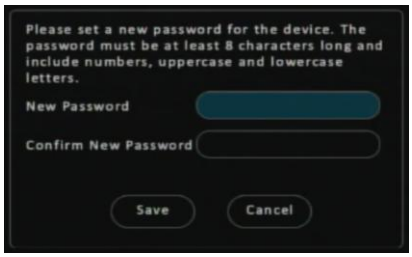
A complete OSD map is found in Chapter *12 On-screen Display Map*.

Language is supported in current MDR firmware versions.

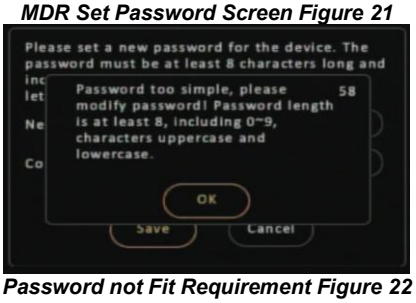
9 language options in total, which are English, German, Italian, Portuguese, Spanish, French, Polish, Dutch, Russian.

Language selection is supported in current MDR firmware versions.

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



MDR Set Password Screen Figure 21



Password not Fit Requirement Figure 22

MDR Language Options Figure 23

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

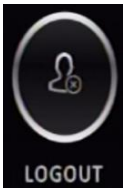
This menu consists of: Recordings Search, System Information, Log Search, Setup and Logout.

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

Menu Structure Figure 24

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.

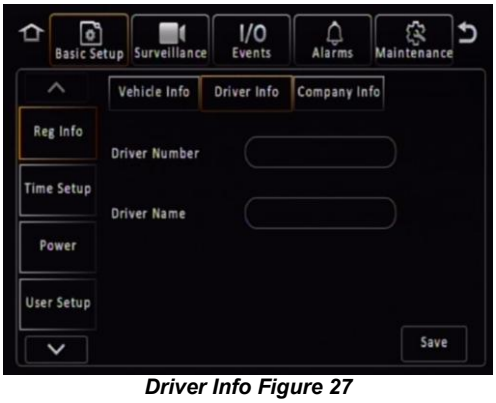
Vehicle Number is typically used in fleet/bus applications where a vehicle has an associated fleet number. This can be captured in this field to assist in identifying the vehicle.

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.

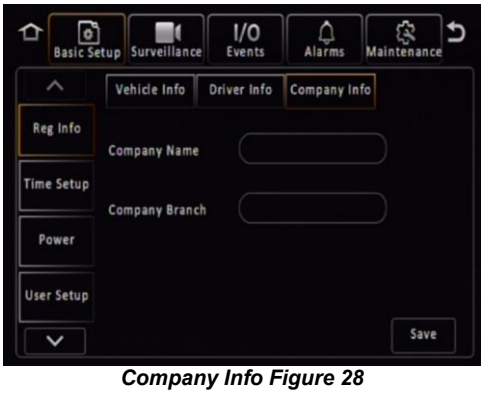


Driver Info Figure 27

5.1.1.3 Company Information

Company Name can be used to identify various fleet types. This field will be synchronized to display on the MDR-Dashboard software vehicle information section, which is under the vehicle fleet window..

Company Branch will make the vehicle information more detailed. 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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.2.2 Time Sync*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.2.3 Daylight Saving Time (DST) *

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.3 Power*

5.1.3.1 On/Off*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.3.2 Voltage*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.3.3 Sleep*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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.

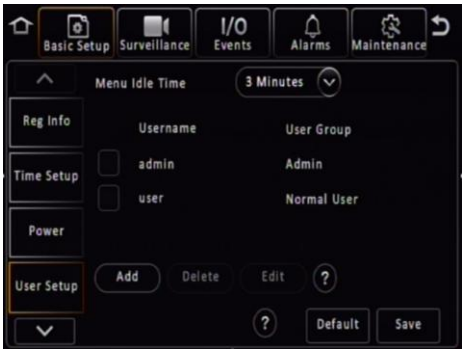
Username is the name you use to log onto the MDR. By default, there are two usernames: **admin** and **user**.

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 29

5.1.5 HDD Key*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.6 Network*

5.1.6.1 Ethernet*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.6.2 Ports*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.6.3 Wi-Fi*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.6.4 Mobile Network*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.6.5 Server*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.7 Application*

5.1.7.1 FTP Server*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.1.8 Other Setup*

5.1.8.1 Algorithm*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.2 Surveillance

5.2.1 Live View

5.2.1.1 Preview

Note: The MIRROR and FLIP VERTICAL features 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 30

Image Setup Figure 31

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 32

5.2.1.2 Autoscan*

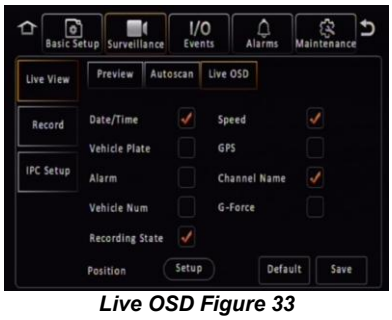
For details, please refer to www.brigade-electronics.com for the full version of this manual.

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 33

Live OSD Position Figure 34

5.2.1.4 RTSP (Real Time Streaming Protocol)*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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 36*

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 38.*

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.

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

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

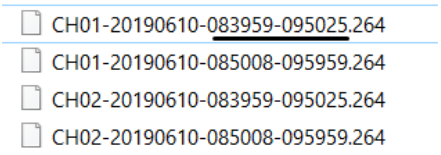
Note: When SD cards/HDDs are replaced, they must be formatted before using the MDR.

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.

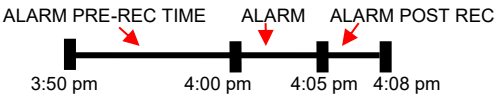
Note: This value cannot reflect correct status if using a 3rd party SD card.

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.

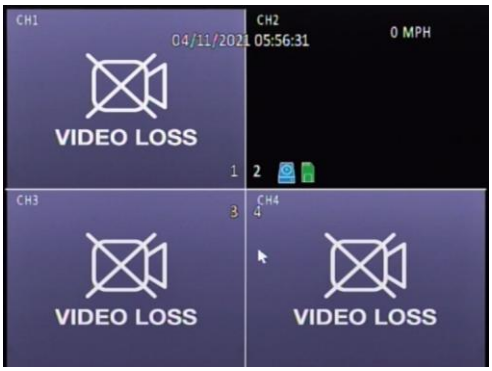
Record Figure 35



Conflict Footages Show in Computer Figure 36



Record 2 Figure 37



Disabled Channel 2 Live View Figure 38

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.

Record 3 Figure 39

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.

HDD 1 Figure 40

Channel is used to identify the channel.

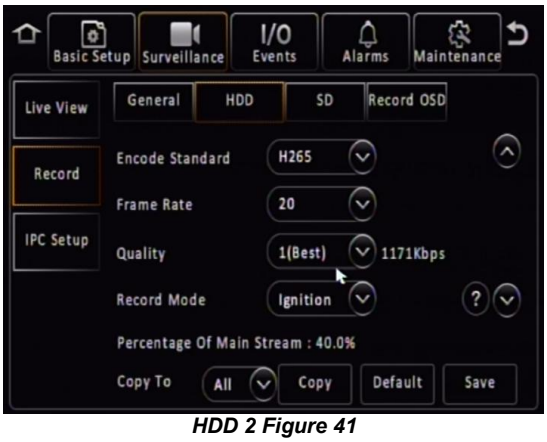
Channel Name is used for an 8-character name which each camera channel can be associated with. These can include lower/upper alphanumeric characters. This is displayed on the live OSD.

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.

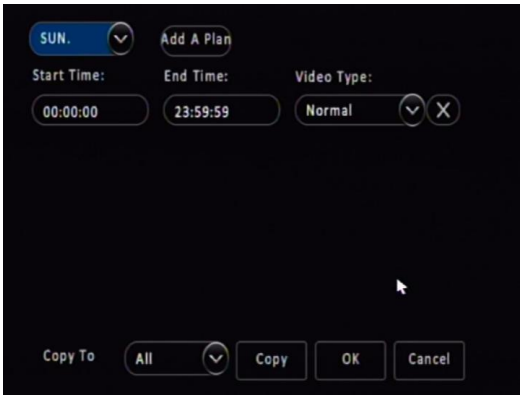
Note: For IP camera channels, since IP cameras have their own embedded settings, upon connecting to MDR, the MDR channel setting will automatically change to IP camera settings. Users may need to manually adjust the setting after connected.



HDD 2 Figure 41

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 – Timer Figure 42

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

- **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.

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 43

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*
For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.2.2.4 Record OSD
Record OSD refers to information that will be overlayed on 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 44

5.2.3 IP Camera Setup*
For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.3 Events

5.3.1 General

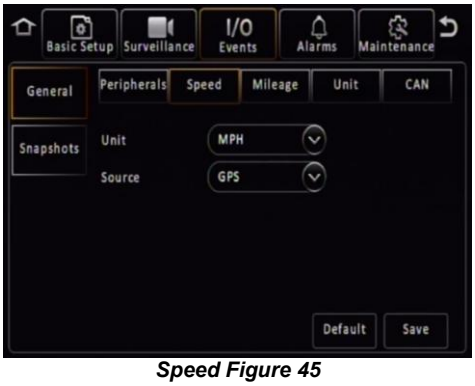
5.3.1.1 Peripherals*
For details, please refer to www.brigade-electronics.com for the full version of this manual.

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.



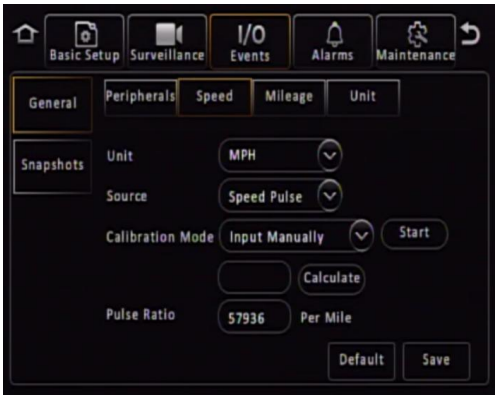
Speed Figure 45

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 4 0 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 46

5.3.1.3 Mileage*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.3.1.4 Unit*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.3.1.5 CAN

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

5.3.2 Snapshots*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.3.2.1 Time Snap*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

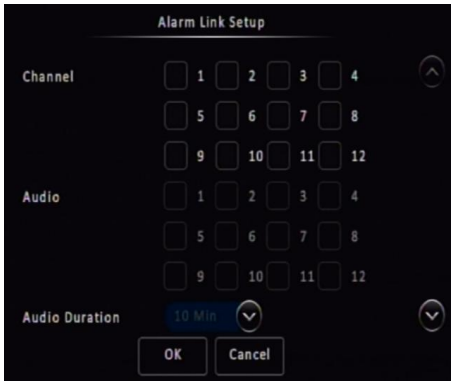
5.3.2.2 IO Snap*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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). **All alarms use the Alarm Link Setup page. (See *Alarm Link Setup 1 Figure 47*)**



Alarm Link Setup 1 Figure 47

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 available on all 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 43*). There might have 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 enabled the audio, a 2nd alarm disabled for 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.

Audio Duration defines how long audio recording will continue after the alarm happens. By default, this is 10 minutes.

Post Record specifies the period of recording added at the end of an alarm. For instance, if a sensor is triggered for 1 second 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.

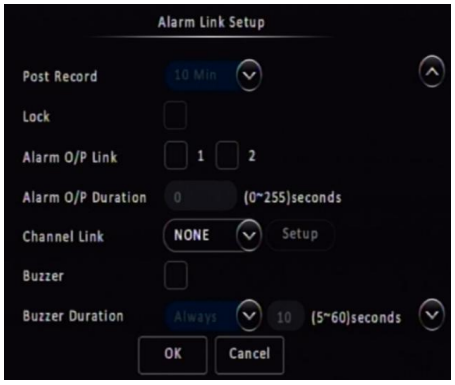
Alarm Output Duration represents the amount of time the alarm output will be active for. This can be between 0 and 255 seconds.

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

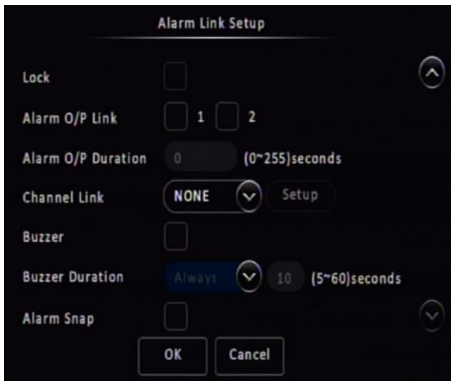
Buzzer refers to the built-in buzzer inside the MDR docking station or Remote Panel buzzer when using it with MDR 641 Series. Once this is enabled the duration can be configured.

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 2 Figure 48



Alarm Link Setup 3 Figure 49

5.4.1.1 Speed Alarm*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.4.1.2 Panic Alarm*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

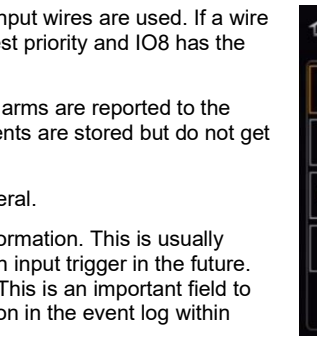
5.4.1.3 IO Alarm

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.

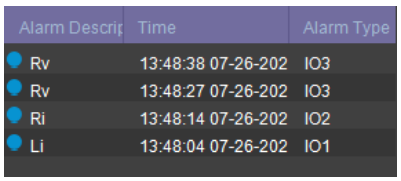
Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

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.

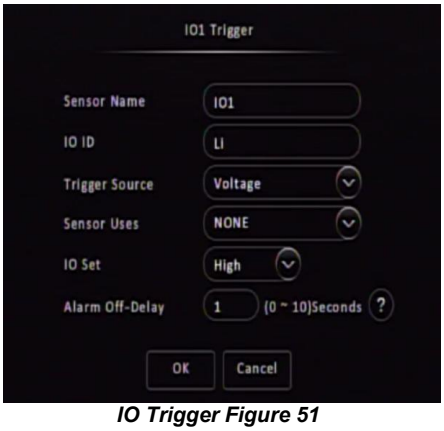


IO Alarm Figure 50



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 (Li), IO2 for right indicator (Ri), IO3 for reverse (Rv) and IO4 for brake (Br). The IO wires have a priority with OI1 being the highest and IO8 the lowest.

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.



IO Trigger Figure 51

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 52*. 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*. There are a few other options which are currently not in use, these are reserved for future development.

IO Reverse Mirror Figure 52

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.

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.

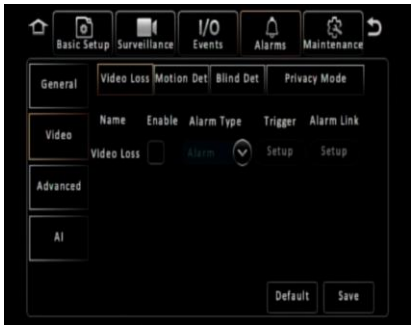
Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

For Alarm Link Setup details refer to Chapter 5.4.1 General.

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

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.



Video Loss Alarm Figure 53

Video Loss Setup Figure 54

5.4.2.2 Motion Detection*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.4.2.3 Blind Detection*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.4.2.4 Privacy Mode*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.4.3 Advanced

5.4.3.1 G-Force*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.4.3.2 Geo-Fence*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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 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 HDD has still not recovered, then this alarm will be generated and output.

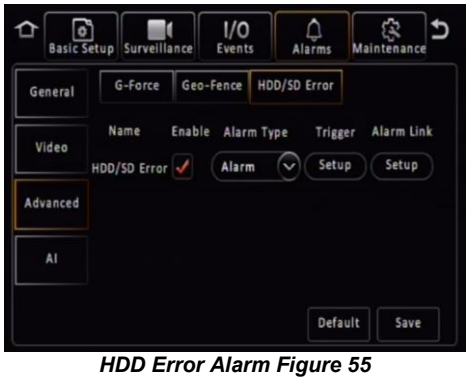
Alarm Type can either be alarm or event. Alarms are reported to the Centre Server (depending on MDR model). Events are stored but do not get reported to the Centre Server.

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).

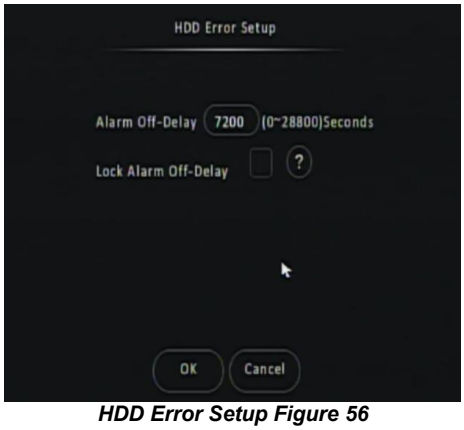
Lock Alarm Off-Delay by default is on. When it is not enabled, after the first alarm has been triggered, if another one triggered within the **Alarm Off-Delay** period, this alarm will be subdued as it should be, but the **Alarm Off-Delay** counting will be refreshed and count from 0 again. Enabling 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 55



HDD Error Setup Figure 56

5.4.4 AI*

5.4.4.1 ADAS*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.4.4.2 DFC*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.5.1.2 Network File*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.5.1.3 Geo-Fence File*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.5.3 Upgrade

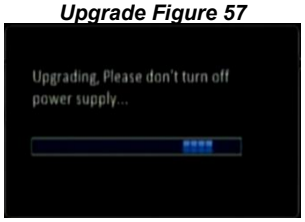
A bus-powered USB hub (minimum of 2 USB ports for USB mouse and USB flash drive) will be required for upgrade procedures.

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 58*. After the upgrade, the MDR will restart and display *System Upgrade Figure 59*. Check if the firmware/MCU version has been upgraded successfully by checking system information.

Upgrade Figure 57

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 60*. If the firmware version is the same version installed on the MDR then no upgrade will occur.



Upgrading Progress Figure 58

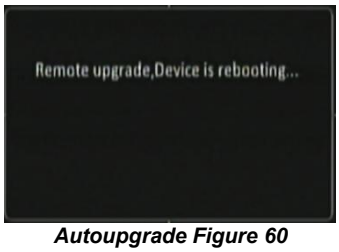
***Warning*: Do not connect an external HDD to the front USB port. Only USB Flash drives (which contain flash memory) are supported by this port. Brigade will not be held responsible for incorrect use of this port.**

***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.**

System Upgrade Figure 59

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

Hazard Warning Unit Upgrade refers to upgrade Hazard Warning Unit.



Autoupgrade Figure 60

5.5.4 Storage

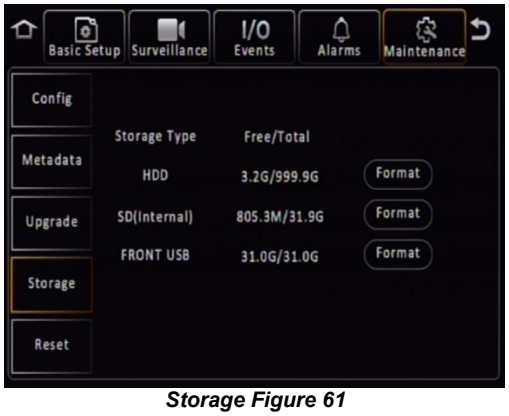
Format is used to remove data from the different storage types. It is possible to format **HDD**, **SD (Internal)**, **SD (Fireproof Box)** and **Front USB**. You will be asked to confirm if you would like to format prior to the MDR starting the format process.

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 61

5.5.5 Reset*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

5.5.6 Certificate*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

6 Record Search*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

7 Log Search*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8 System Information*

8.1 Version Information*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.2 Modules*

8.2.1 Mobile Network*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.2.2 Wi-Fi*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.2.3 GPS*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.3 Server Status*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.4 Environment*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.5 Storage*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.6 History*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

8.7 About*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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 an MCU Reader, to connect the PC with the MCU. For more details, please refer to Chapter 2.2.2 MCU Reader.

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)

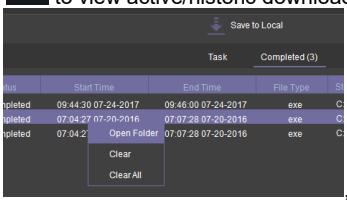
Open the software by right-clicking on the icon  , select “Run as administrator”. This will allow the software to read information from the MCU. The default “username”: admin and no default password. Once users have filled in username (this must be lower case) click OK.

In Local mode, you have two playback options, HDD and Directory. HDD - is active when the physical MCU 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. As 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 are playable by common players such as Windows Media Player (WMP™). Each channel is saved separately, so simultaneous multi-channel viewing is not possible. 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.

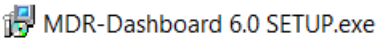
Click the download button  to view active/historic downloads. The completed tasks automatically move to the Completed tab. Right-click a task and click open folder 

, this will automatically open the location of your downloaded data.

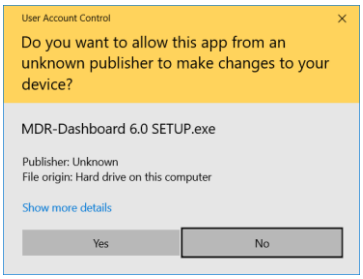
9.3 Installing MDR-Dashboard 6.0

- This operation is performed on the client PC. Right-click the installation file shown in *MDR-Dashboard 6.0 icon Figure* 62 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, which is listed in *MDR-Dashboard 6.0 Setup Figure 65.* Installation windows will switch to the chosen language after clicking OK.

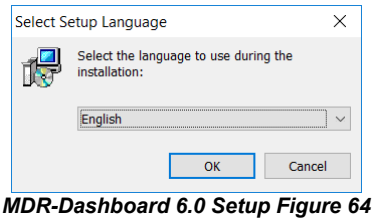
Note: this only applies for installation windows, not the MDR-Dashboard 6.0 client interface. The MDR-Dashboard 6.0 client language will follow the current computer’s language. If you want to change the client interface, please refer to *9.11 User and System settings**.



MDR-Dashboard 6.0 icon Figure 62

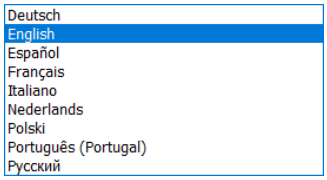


MDR-Dashboard 6.0 Setup Figure 63

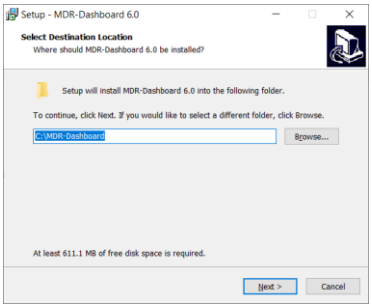


MDR-Dashboard 6.0 Setup Figure 64

- Users can configure the installed location (if there is not enough free disk space) which is shown in MDR-Dashboard 6.0 Location Figure 66. 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 67.

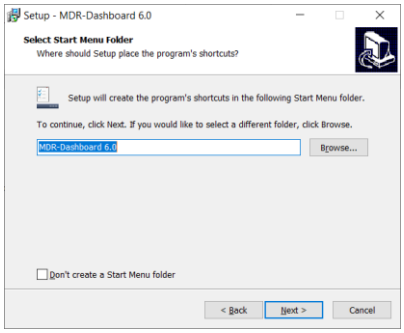


MDR-Dashboard 6.0 Setup Figure 65

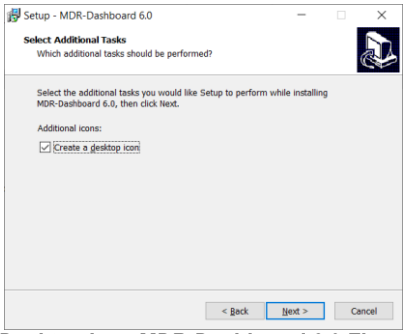


MDR-Dashboard 6.0 Location Figure 66

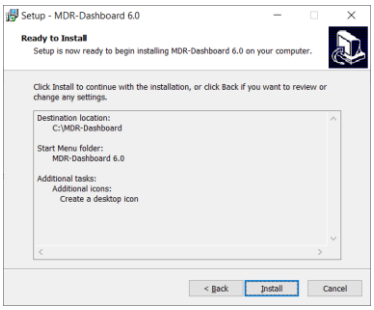
- Referring to Desktop Icon MDR-Dashboard 6.0 Figure 68, users can choose if a desktop icon is created.
- Users are now prompted to click NEXT to begin the installation. This is indicated in MDR-Dashboard 6.0 Installation Figure 69.
- In MDR-Dashboard 6.0 Launch Step Figure 70 depicts the final step, users may choose to launch the software or open MDR Video Tutorial provided by Brigade Electronics. Tick the box and click FINISH.



Start Menu MDR-Dashboard 6.0 Figure 67



Desktop Icon MDR-Dashboard 6.0 Figure 68



MDR-Dashboard 6.0 Installation Figure 69

MDR-Dashboard 6.0 Launch Step Figure 70

9.4 Connecting the MCU to the PC

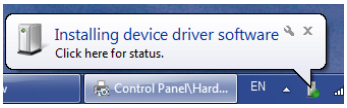
9.4.1 Pre-Connection Procedure (Preferred)

- 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 71*.

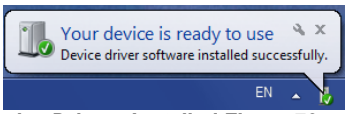
Windows Update Figure 71

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 **Error! Reference source not found.**) then connect the MCU reader to the PC via the Brigade USB cable provided along with the MCU reader.
  *(The USB cables are different, despite being the same blue colour).
- Connect the USB-A (data and power) connector to a USB port on the PC. *Installing Device Driver Figure 72* will be displayed.
- Once *Device Drivers Installed Figure 73* 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 72



Device Drivers Installed Figure 73

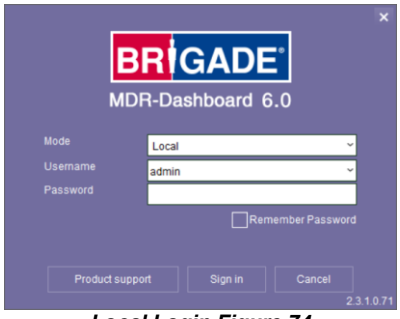
Warning: **Premature removal of the MCU USB-A cable from the PC (during driver installation process) will cause this process to fail. This will cause the HDD to not appear in the MDR-Dashboard 6.0.**

9.4.3 Connection Confirmation*

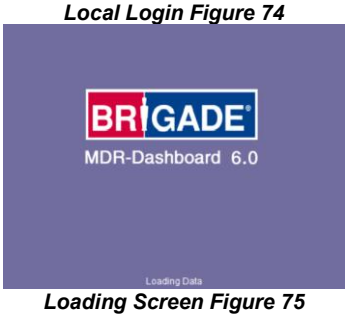
For details, please refer to www.brigade-electronics.com for the full version of this manual.

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 74.
- Default Username: admin . No password required, 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 75*.



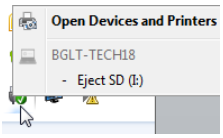
Local Login Figure 74



Loading Screen Figure 75

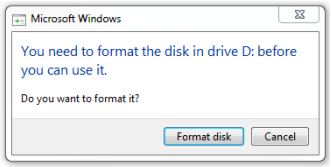
- This process allows users to load the content of either a connected HDD Caddy (using the USB cable) or a mirror recording from the internal/external SD Card.
- Reading these media storage devices may be slow depending on the amount of data recorded and the speed of the interface.

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 76* and *Cancel Format Disk Figure 77*).
***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.**

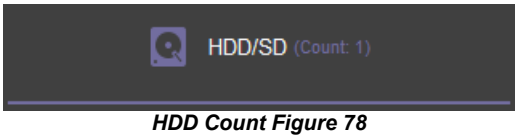


Eject Figure 76

- 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 78*.

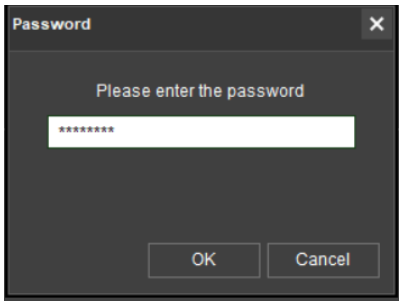


Cancel Format Disk Figure 77



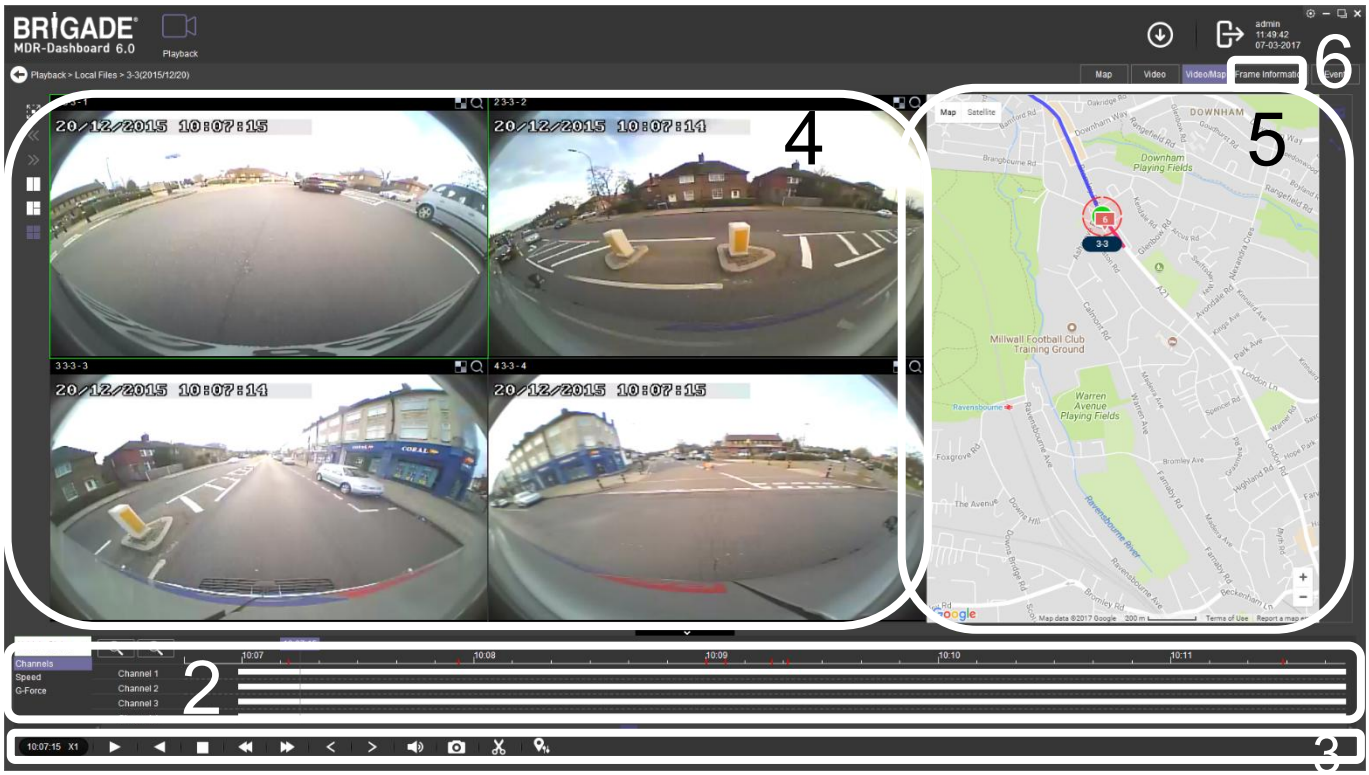
HDD Count Figure 78

Note: If MDR has enabled the 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 79

9.6 MDR-Dashboard 6.0 Local Mode

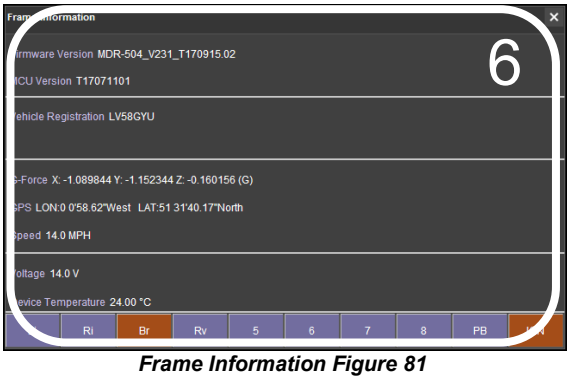


MDR-Dashboard 6.0 User Interface Figure 80

The MDR-Dashboard 6.0 user interface is sub-divided into several numbered areas as illustrated in *MDR-Dashboard 6.0 User Interface Figure 80*:

1. Data Source Access (See *Chapter 9.7 Loading from a USB flash drive or Folder**)
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 81

9.6.1 Channel Info*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.6.2 Events and Graphs*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.6.3 Frame Information*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.6.4 Sensor Status*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.6.5 Map Tracking*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.7 Loading from a USB flash drive or Folder*

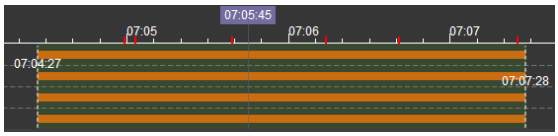
For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.8 Reading Data*

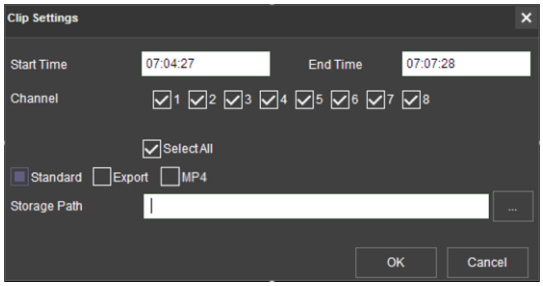
For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.9 Exporting Videos

- Click on the **CLIP** button (only accessible while the video is being played or paused.
- Green clip markers appear (broken vertical lines). See *Clipping a Video Figure 82*.
- 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 83.*
- 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 in the following format: *\Company_Name-Vehicle_Number\YYYY-MM-DD\record*

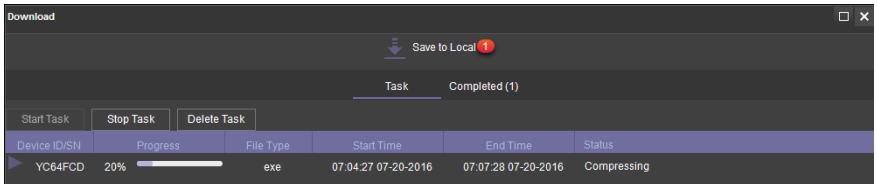


Clipping a Video Figure 82



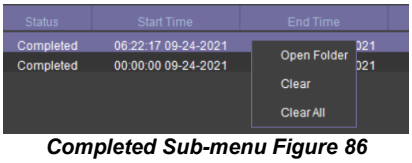
Clip Settings Figure 83

- 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 must be password protected which can be 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 84*. 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 madey be deleted using the .

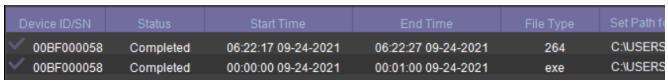


Current Download Tasks Figure 84

- Completed tasks automatically move to the Completed tab, see *Completed Download Tasks Figure 85.*
- Right-click a completed task to access a sub-menu as shown in *Completed Sub-menu Figure 86.*



Completed Sub-menu Figure 86



Completed Download Tasks Figure 85

9.10 Saving Snapshots*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

9.11 User and System settings*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

10 MDR-Player 6.0

MDR-Player 6.0 is like 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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

10.2 Setting up MDR-Player 6.0*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

10.3 Basic Operations*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

11 Advanced Ethernet Configurations*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

11.1 Ethernet Setup*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

11.2 Ethernet Operation*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

11.3 Ethernet Maintenance*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

11.4 Ethernet Log*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

11.5 Ethernet Configuration*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12 On-screen Display Map*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.1 Rec Search*

12.1.1 Rec Search*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.2 SYSTEM INFO*

12.2.1 Version Info*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.2.2 Modules*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.3 LOG SEARCH*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.4 SETUP*

12.4.1 Basic Setup*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.4.2 Surveillance*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.4.3 Events*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.4.4 Alarms*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.4.5 Maintenance*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

12.5 LOGOUT*

12.5.1 Logout Prompt*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

13 MDR Audio Alerts Summary*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

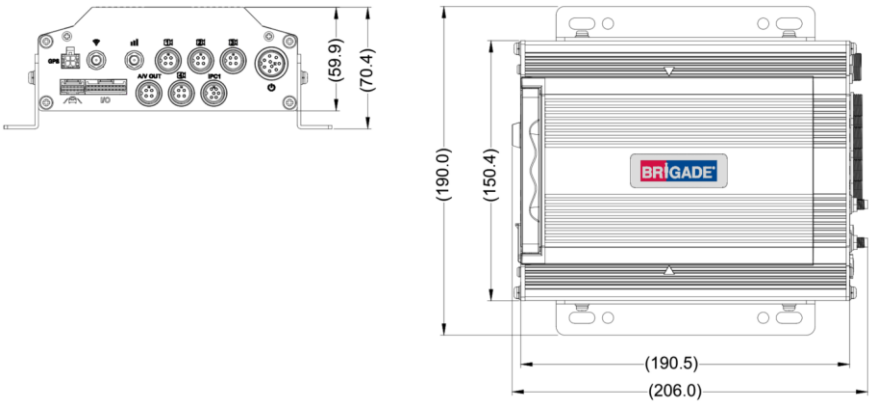
14 Help Button*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

15 Mounting Dimensions

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

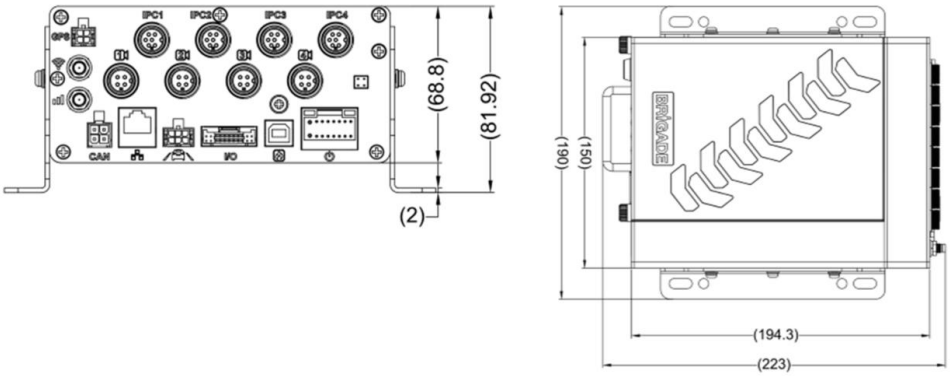
For mounting hole dimensions please refer to the MDR-BKT-02 drawing.



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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

16.4 MDR-Dashboard 6.0 Silent Installation*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

16.5 MDR-Dashboard 6.0 Additional PowerShell Switches*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

16.6 Events Table*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

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 in SYS INFO using the mouse (if a Brigade monitor is connected).

18 General Antenna Guidelines

(a) Ensure that the cable is:
- properly secured but ensure that the cable is 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 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. 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 sound 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. Require the LED panel of the MDR or a remote panel to always be visible to driver 3. The sound 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 sound buzzer is activated or a sound 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 sound buzzer is activated or a sound 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*

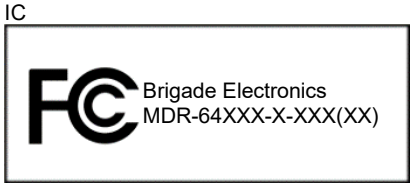
For details, please refer to www.brigade-electronics.com for the full version of this manual.

20 Specifications*

For details, please refer to www.brigade-electronics.com for the full version of this manual.

21 Approvals

CE
UKCA
UNECE Regulation No. 10 Revision 6 (“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 is 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
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
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.