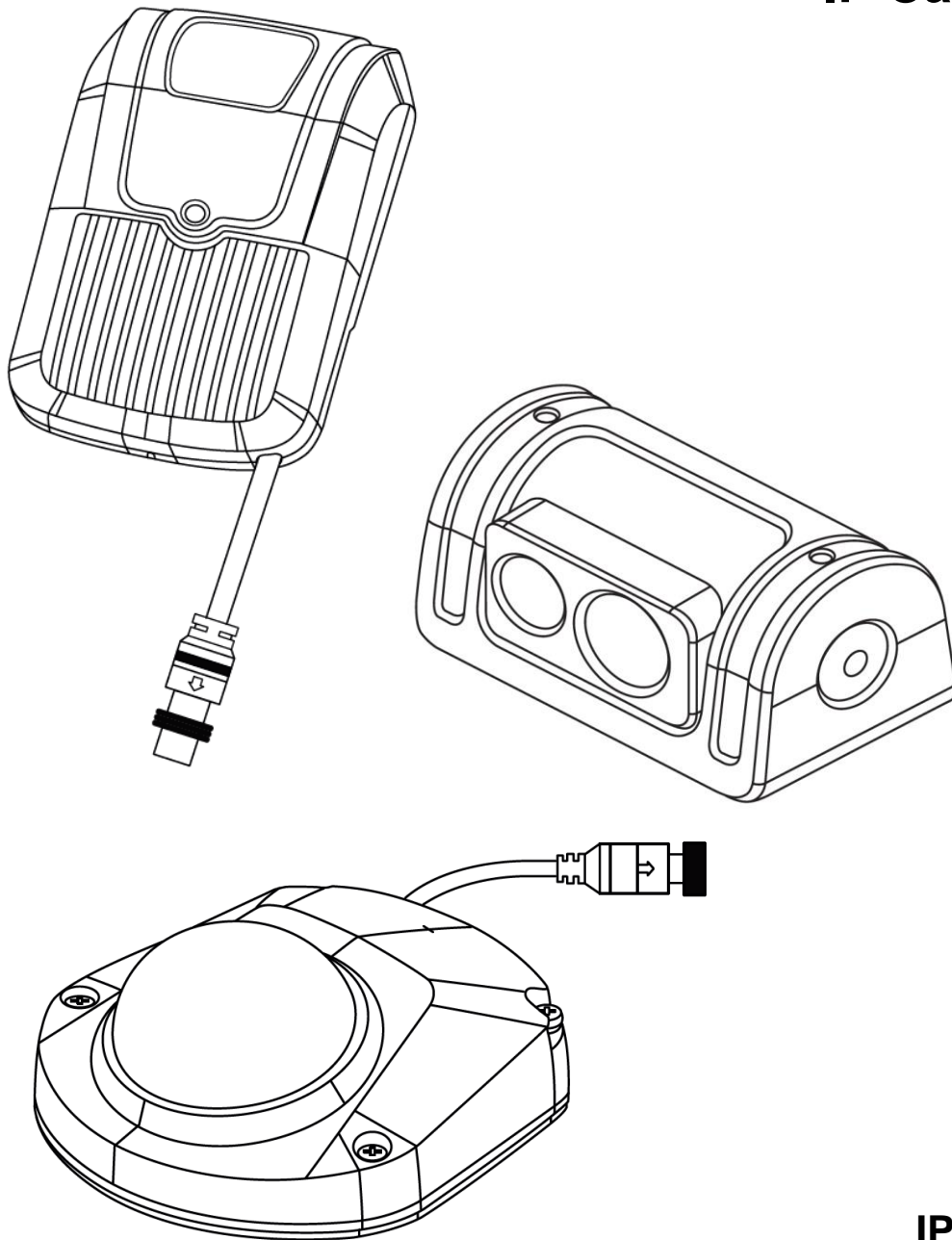


## IP Cameras



**IP-1XXXC**

## Operational Guide

Please refer to [www.brigade-electronics.com](http://www.brigade-electronics.com) for the latest version of this manual



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# 1 Introduction to IP Camera Technology

Internet Protocol Cameras, also known as IP Cameras, are a type of digital video camera commonly used for surveillance that receive and send control or image data via the internet protocol suite (TCP/IP). Unlike analogue cameras, IP cameras can be accessed through a local area network via a web browser.

IP Cameras have a default IP address, username, and password for authentication. Through this, all their settings and their image output can be set or viewed by a computer. Brigade IP Cameras such as IP-1000C, IP-1100C and IP-1200C utilise a proprietary MDR5/MDR6 protocol that is shared with Brigade MDR 500 and 600 Series products. MDR 500 and 600 Series products have full access to these IP cameras' settings (such as resolution, image quality, recording setup) which can be transmitted from the MDR 500/600 to the IP Camera. IP Cameras that comply with MDR5/MDR6 protocol can utilise the quick and easy **Fast Setup** MDR function (explained in 3.2 *Fast Setup*) on the MDR-500 Series products.

Brigade MDR-600 Series products offer "plug and play" compatibility with Brigade IP Cameras; simply connect the IP Cameras to the IP Camera ports on the MDR-600 and it will automatically display the video feeds on the respective channels.

Brigade MDR 500 and 600 Series products also support ONVIF (Open Network Video Interface Forum) protocol, which is a global and open standard for the interfacing of physical IP-based security products. MDR products can view and record video from ONVIF based cameras but are unable to adjust the camera's IP address.

Brigade IP Cameras operate at 1080p high-definition resolution (1920 x 1080 pixels) which provides a clear and sharp video for recording. This is useful for reading number plates or identifying facial features when reviewing recordings.

**Warning:** IP Camera video latency is around 230 – 270ms due to the video processing and compression prior to transmission to the recorder. As such, IP Cameras should only be used for surveillance purposes and not live view applications.

Table 1: Description of IP Camera Models:

MODEL	Resolution	Application	IP Rating	Infrared	Audio
IP-1000C	Refer to specification Section 7.1	Forward Facing	IP20	No	Yes
IP-1100C	Refer to specification Section 7.2	Surface-mount, side viewing	IP67	Yes	No
IP-1200C	Refer to specification Section 7.3	Interior and General Use	IP65	Yes	Yes

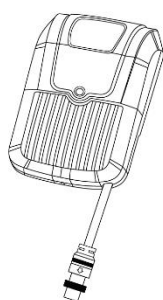
**Note:** IP camera resolution can drop to 720P based on IP camera configuration or MDR settings.

## 1.1 Features

- Infrared sensitivity enables cameras to work independent of environmental lighting conditions, such as at night (except IP-1000C)
- Automatic wide dynamic range (WDR) allows cameras to adapt to bright and dark image conditions easily
- Backlight compensation helps to automatically control image exposure
- White balance adjusts colours for a more natural image
- Embedded web setup menu, accessible via a web browser
- Adjustable network port 10/100M
- Compatible with H.264 and H.265 compression
- Built-in G-sensor for automatic image orientation (IP-1100C only)
- Operating voltage 10-14V
- Operating temperature -40°C to +70°C

## 1.2 IP Camera Kits & Accessories

### 1.2.1 IP-1XXXC

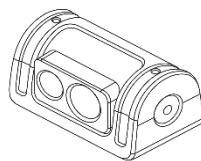


IP-1000C

#### Accessories



T8 Torx wrench



IP-1100C

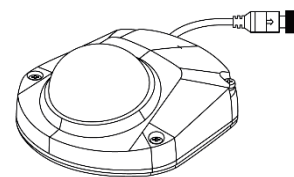
#### Accessories



fixings



Hex key



IP-1200C

#### Accessories



Fixings



T10 Torx wrench

### 1.3 Optional Ancillaries

#### 1.3.1 Extension Cables



- IP-L6XX: IP Camera Extension Cable – X metre (“XX” in model name refers to cable length)

#### 1.3.2 MDR 500 Series



MDR 500 Series 4 Channel Control Unit with 500 GB / 1 TB / 2 TB HDD, GPS, 4G, Wi-Fi & 32GB SD Card (Depending on model)  
MDR-504XX-XXXX(X)



MDR 500 Series 8 Channel Control Unit with 1 TB / 2 TB HDD, GPS, 4G, Wi-Fi & 64GB SD Card (Depending on model)  
MDR-508XX-XXXX(X)

#### 1.3.3 MDR 600 Series



MDR 600 Series 8 Channel Control Unit with 500GB / 1TB / 2TB SSD or HDD, 4G, Wi-Fi & 64GB SD Card (Depending on model)  
MDR-644XX-X-XXX(X)



MDR 600 Series 5 Channel Control Unit with 500GB / 1TB / 2TB SSD or HDD, 4G & Wi-Fi (Depending on model)  
MDR-641XX-X-XXX(X)

#### 1.3.4 Power Over Network Switch



MDR - Power Over Network Switch - 4 Ports  
IP-EM4



MDR - Power Over Network Switch - 8 Ports  
IP-EM8

**Warning:** IP-EM8 does not work with MDR-504xx-xxxx products.

#### 1.3.5 Power and Ethernet Cable



Power and Ethernet Cable  
IP-1XXX-PC

**Note:** Combined cable for single camera use when connecting directly to MDR 500 Series products (not required for MDR 600 Series)

## 2 Hardware Installation

### Warning

- The IP Camera must be powered with a 12V regulated power supply. Brigade cannot be held responsible for any damage caused due to negligence or incorrect usage.

### 2.1 Multiple IP Cameras to MDR Setup

**Note:** The following setup is for the MDR-500 Series only; the IP cameras can be directly connected to the MDR-600 Series.

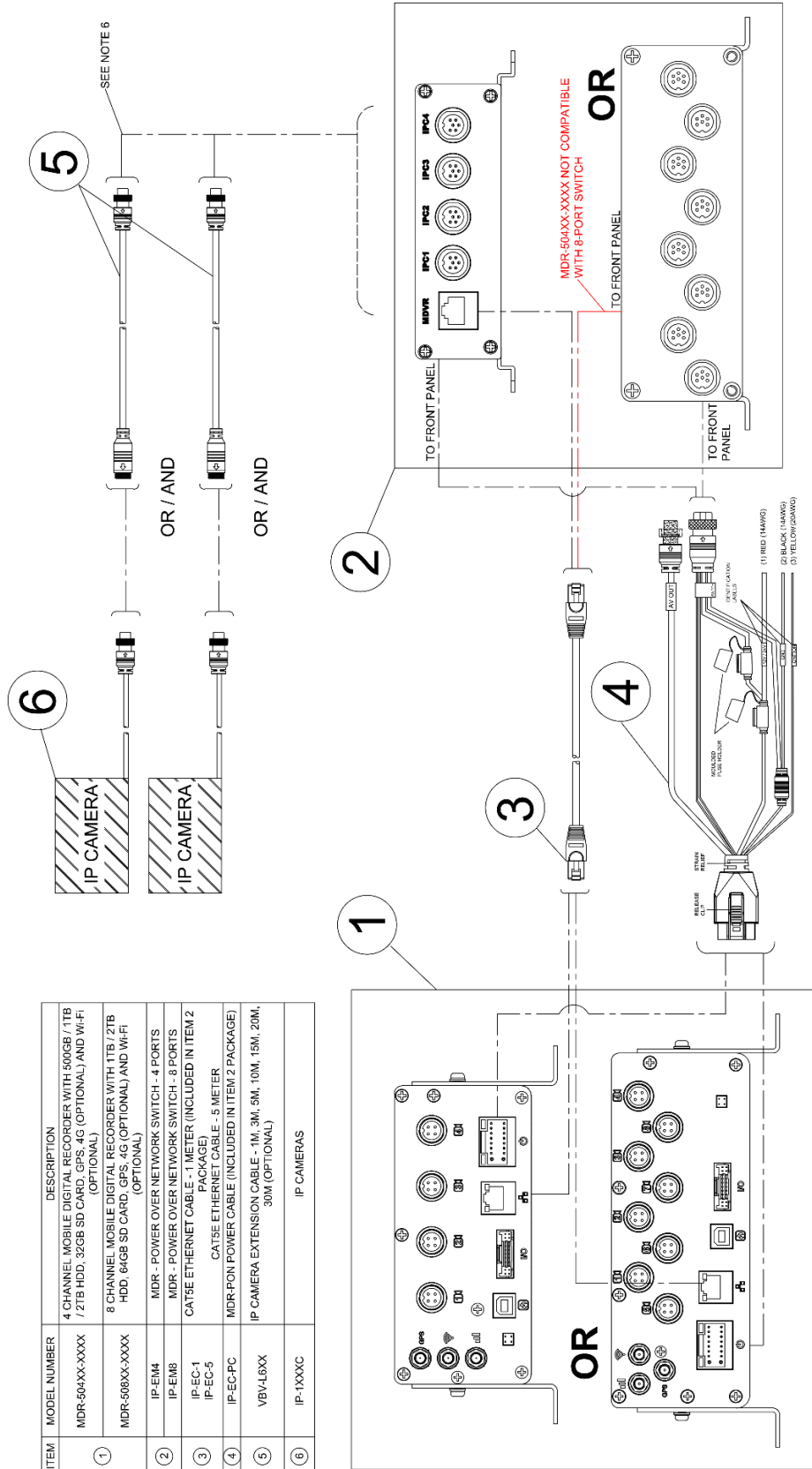


Figure 1 - Multiple IP Cameras to MDR Connection Diagram

## 2.2 Single IP Camera to MDR Setup

**Note:** The following setup is for the MDR-500 Series only; the IP camera can be directly connected to the MDR-600 Series.

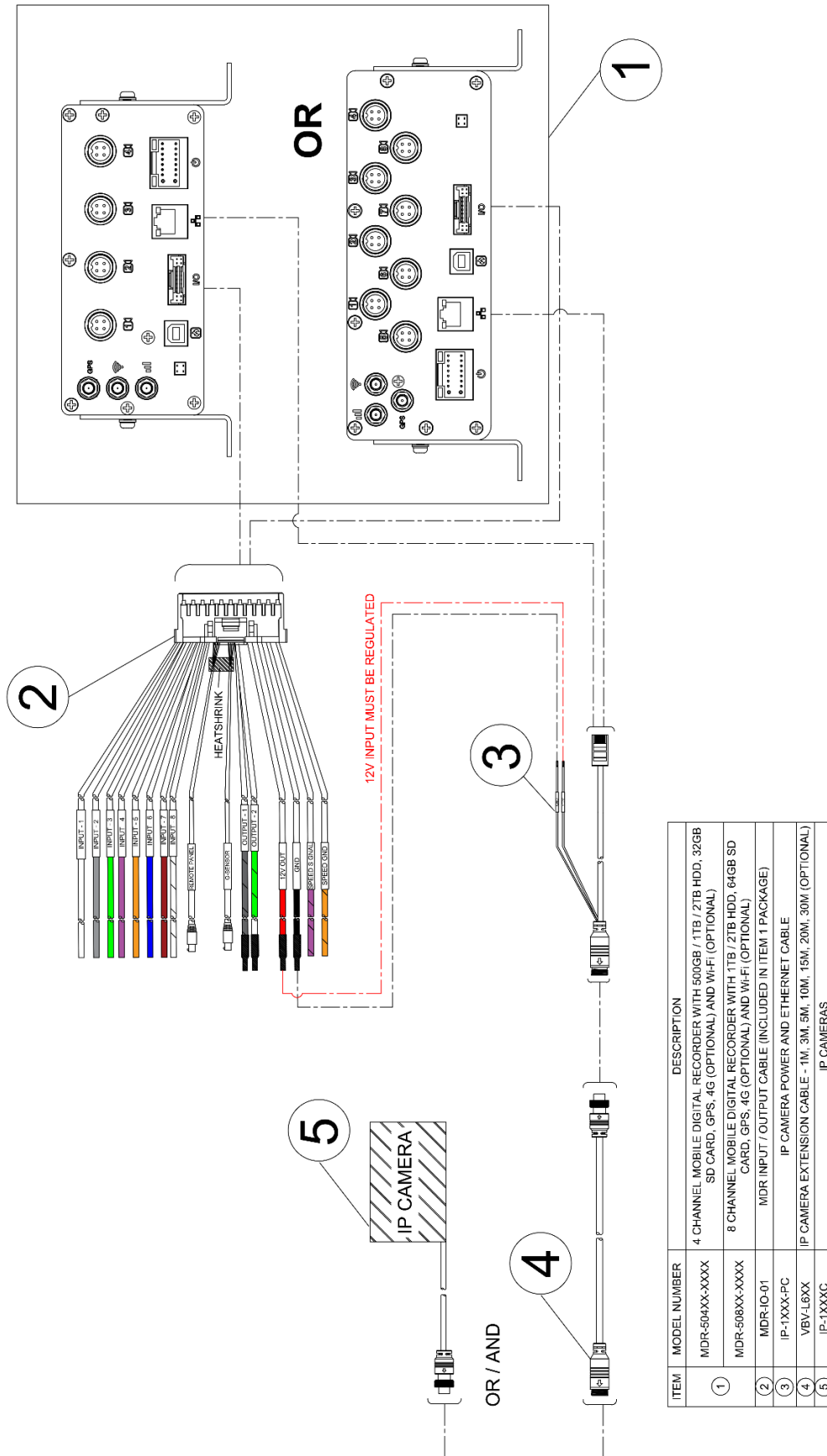


Figure 2 - Single IP Camera to MDR Connection Diagram



### 3 MDR On-Screen Display (OSD)

This chapter describes the configuration of the MDR.

Brigade's MDR products display a single, quad, or 9-split live view. Change this to 9-split by right clicking the mouse and selecting the option from the bottom banner. See *Figure 4* and *Figure 5*.

**Note:** For ease of understanding, channels that can accept analogue cameras will be referred to as **analogue channels**; those channels that cannot accept analogue cameras will be referred to as **IP channels**.

**MDR-504/644/641** - By default, the first 4 channels are used for analogue cameras, which cannot be used by IP cameras. IP cameras can be assigned to channels 5 and 6.

**MDR-508** - by default, the first 8 channels are used for analogue cameras. These channels can be re-assigned to IP cameras. During the setup of an IP camera with an MDR, the installer can manually assign any channel (1-16) to an IP camera. MDR-508 IP camera support is flexible, allowing them to be used on any of the channel inputs.

**Warning:** For MDR-508/644/641, all channels could be manually overridden to display IP camera footage. Make sure all cameras are visible during channel assignment.

To differentiate between analogue channels and IP channels:

- a. Analogue channels are enabled by default, if the MDR cannot detect a camera or video signal then that channel on the OSD will show "VIDEO LOSS", as shown in figures 4-6.
- b. IP channels, however, are disabled by default and display "No device" instead. If the IP camera channel has been set up and enabled but the IP camera has a data connection issue with the MDR, it will show "VIDEO LOSS". Refer to Figure 6 "IP Camera Lost Data Connection". Setup procedures will be explained in Sections 3.2 Fast Setup & 3.3 Advanced Setup.



Figure 4 - MDR-504 9-split Screen



Figure 5 - MDR-508 9-split Screen



Figure 6 - IP Camera Lost Data Connection

#### 3.1 IPC Setup

Navigate to **SETUP->SURVEILLANCE->IPC SETUP** to view all IP camera settings. Refer to *Figure 7 – IPC Setup*.

**Channel** lists all channels for this MDR.

**Enable** is used to choose a specific channel for IP Camera usage. Without ticking this box, other settings will remain greyed out and cannot be set.

**IP and Port** displays the IP address and communication port of the currently connected IP camera. 80 is the default port used by MDR. There is no need to change this setting.

**Warning:**

1. IP cameras must have unique individual IP addresses to avoid conflicts.
2. The IP address should be in the range of 10.100.100.XXX, where XXX stands for any number between 1 and 255.

**Outside** is currently not supported.



Figure 7 - IPC Setup

**Setup (Network Setup)** click  to view IP channel parameters.

**Warning:** The settings only apply to the specific channel selected. Use caution when changing any parameters here in case the channel becomes unable to map the correct IP camera.

The IP address section is number-sensitive and requires all leading zeroes to be kept, e.g., 010.100.100.001.

**Channel** shows the current channel number.

**Protocol Type** offers 2 options which are “MDR5/MDR6” or “ONVIF”. MDR5/MDR6 protocol gives an MDR full access to the IP camera settings. Currently IP-1000C, IP-1100C and IP-1200C support MDR5/MDR6.

**IP address** shows the current IP address of the connected IP camera. Do not change this IP address, otherwise the channel will be unable to find the correct IP camera.

**Port** is for communicating between the MDR and IP camera.

**Username** is authentication information which allows the MDR to display and fully control the IP camera.

**Password** is authentication information which allows the MDR to display and fully control the IP camera.

**Warning:** By default, the IP camera username is 'admin' with no password. If the installer changes these default credentials, the MDR may lose communication with the camera, resulting in 'VIDEO LOSS' displayed on the channel

**Local Address** determines the IP address for this MDR and what range of IP addresses it can detect. The IP address range is fixed to 10.100.100.XXX, which means every connected IP camera must be within this range (subnet mask). This allows the MDR to detect and communicate with the IP cameras.

**Fast Setup (MDR-500 Series only)** is an automatic configuration function which detects and assigns sequential IP addresses to IP cameras (currently compatible with MDR5 enabled cameras only). This allows installers to quickly batch set up multiple IP cameras at once without having to repeat the process. Brigade recommends using this feature for initial installations. (Fast Setup is explained in *Section 3.2 Fast Setup*)

**Default** is used to restore factory settings. All changed settings will be lost.

**Save** confirms and applies all settings to the system.

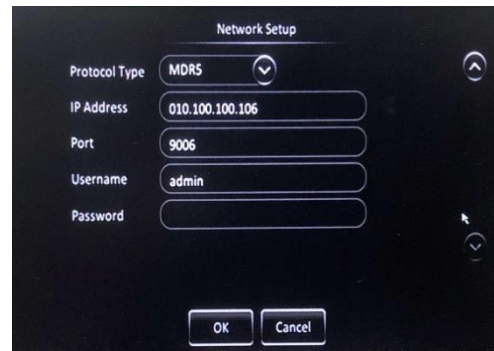


Figure 8 - Network Setup

### 3.2 Fast Setup (MDR-500 Only)

Brigade recommends the use of **Fast Setup** for initial installation, so the camera IP addresses are refreshed and automatically allocated to certain channels.

Click the **Fast Setup** button on the IPC setup page to start the search for currently connected IP cameras. If the camera is compatible with the MDR5 protocol, the IP addresses will all automatically be changed to 10.100.100.XXX.

**Note:** If multiple IP camera were connected at the same time and all comply with the MDR5 protocol, all the IP addresses will be changed by the Fast Setup function to a sequence from 10.100.100.100 to 10.100.100.10X. This feature provides two main benefits:

a. It ensures the correct subnet mask is used, which is within a specific IP address range so that it can communicate with an MDR.

b. It ensures all IP addresses are unique so that there are no conflicts.

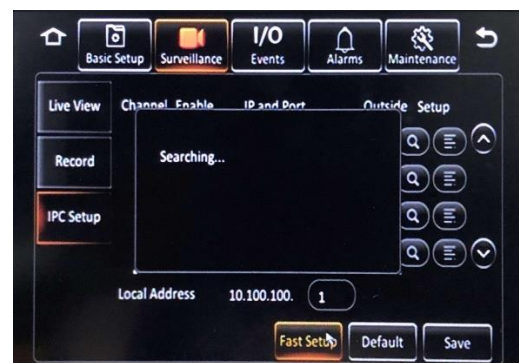


Figure 9 - Fast Setup Searching

After the search is completed, a new interface will be displayed to complete the fast setup. Refer to *Figure 10 "Fast Setup Settings"*.

The left-hand side displays the IP camera's live view to assist with positioning the camera during installation. The text overlay in the image is OSD information, which can be configured in Setup->Surveillance->Record->Record OSD. The right-hand side displays basic setting information.

**IPC ID** displays how many IP cameras are connected and tags the camera by number. E.g., "2/2" states that you are viewing the second camera and there are 2 cameras connected in total.

**Binding CH** determines which channel the IP Camera is assigned to. The IP Camera can be re-allocated to other channels by clicking and scrolling down the list.

**IP Address** is a read-only field showing the assigned IP address for the selected camera.

**Port** is a read-only field that shows the communication port.

**Protocol Type** shows the protocol this camera complies with, which is either MDR5/MDR6 or ONVIF. Brigade does not recommend changing this setting, as the MDR could lose control of the IP camera.

**Username** and **Password** are automatically detected and populated.

**Previous CH** and **Next CH** are used for switching between all available IP cameras for configuration.

**Save** is used to store each camera's settings. Ensure that it is clicked after configuring a channel before switching to configure the next channel. If save is not clicked, all changed settings will be lost.

After all channels have been configured, click **Exit** to view the previous IPC Setup page and click the **Save** button on the right bottom corner to save all channel settings.

*Warning: This section applies if you're using the CAT5 Socket on the MDR600.*



**Figure 10 - Fast Setup Settings**



**Figure 11 - Save All Settings**

### 3.3 Advanced Setup

*Note: If using a non-Brigade IP camera, the IP address must be within 10.100.100.XXX range.*

This setup process is recommended for non-MDR5/MDR6 protocol IP cameras. This process can also be used for maintenance, such as changing binding channels. (Fast Setup will reset all connected MDR5/MDR6 IP cameras including its IP address and allocated channels)

Refer to *Figure 12 "IP Camera Regular Setup"*.

**Enable** IP channels of your choice by ticking each associated box. Click the magnifier button to search for current available IP cameras. In this case, Channel 13 will be used as an example.

All connected and available cameras will show in the IPC Search page, refer to *Figure 13 "IP Camera Search Result"*.

**Remote Chn** selects the IP cameras that will be displayed on the channels that were enabled in the previous screen.

**MAC Address** ("media access control" address) is a unique identifier assigned to network interfaces for communications at the data link layer of a network segment. This consists of 6 groups of 2 hexadecimal digits. This is a read-only field and cannot be changed.

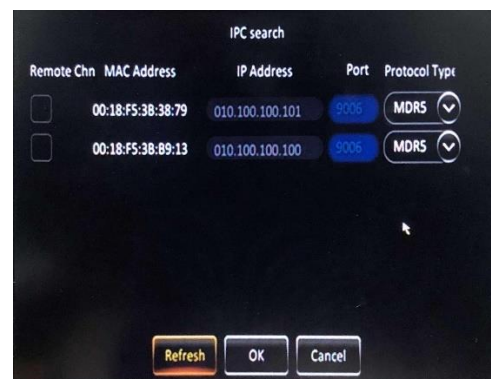
**IP Address** refers to the internet protocol address of the IP camera for identification purposes. This address is used to join the network.

**Port** and **Protocol Type** are auto-detected. Brigade recommends that this is not changed.

Choose the IP camera that should be displayed and click the **OK** button. The information for the chosen IP camera will be shown in the IPC Setup page once the window is closed.



**Figure 12 - IP Camera Regular Setup**



**Figure 13 - IP Camera Search Result**

Save before exiting the IPC Setup page, then check the live view to ensure the IP camera feed(s) display properly.

**Note:** Unlike analogue cameras, an IP camera video feed can be displayed simultaneously in 2 different channels if both channels are configured correctly (i.e., IP address, protocol, username and password).

### 3.4 Recording Setup

After assigning IP cameras to the MDR channels, navigate to the recording setup menu (Setup->Surveillance->Record->HDD) to configure recording settings.

Please refer to MDR Installation and Operational Guide for detailed information pertaining to the MDR. Only IP camera related settings will be covered below.

**Resolution** will automatically detect the camera's highest resolution. The drop-down list will list all available resolutions. Utilizing a lower resolution saves storage space which can help prolong recording time left before overwriting. A 1080P (full HD) IP camera can be set to 720P (HD). However, 720P IP cameras cannot be set to 1080P due to hardware limitations.

**Encode Mode** allows users to choose between Constant Bit Rate (CBR) and Variable Bit Rate (VBR). Note that Variable Bit Rate requires more processing power and may introduce some visible pixelation artefacts due to higher compression rates.

**Save** before exiting this screen.

For sub-stream settings please refer to the MDR Installation and Operational Guide accessible at the Brigade Electronics website ([www.brigade-electronics.com/product-support-area/product-support/](http://www.brigade-electronics.com/product-support-area/product-support/)).



Figure 14 - Mainstream Recording Setup



Figure 15 - VBR vs CBR

### 3.5 IPC Upgrade

It is possible to upgrade the IP camera firmware via the MDR. This feature is currently only available for MDR5/MDR6 compatible IP cameras.

Using a computer, create a folder named "upgrade" on a USB flash drive and copy the required upgrade files into the folder. Multiple upgrade files can be saved in the same folder, as the IP camera will search for the most recent file for upgrading before proceeding with installation.

Plug the USB flash drive into the USB port on the MDR front panel.

**Note: USB hub is required to connect the USB flash drive and mouse to the MDR.**

On the MDR, navigate to **Setup->Maintenance->Upgrade->IPC**.

Click **Upgrade** next to **IPC** to display currently connected and available IP cameras.

The upgrade process can be completed on specific cameras by selecting individual boxes next to them, or simultaneously on all connected IP cameras by selecting the "All" box.

**Current Version** displays the existing FW version on the IP camera(s).

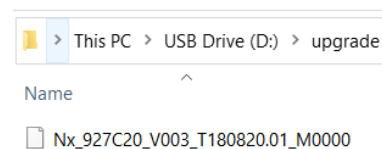


Figure 16 - Upgrade File in Flash Drive



Figure 17 – IPC Upgrade in Upgrade menu

**Upgrade Result** shows the outcome of the upgrade process once completed. The possible results are:

“None”, which occurs when the process has not been completed. To start the process, tick the boxes next to the required camera(s) and click the “Upgrade” button.

“No External Device!”, which occurs when the MDR cannot detect a USB flash drive. The USB flash drive could be damaged or not connected properly.

“Same Version”, which occurs when the upgrade file matches the existing version on the IP camera.

“No upgrade file!”, which occurs when the file or folder is not compatible with the IP camera model.

“Upgraded successfully!”, which occurs when the process has completed successfully.

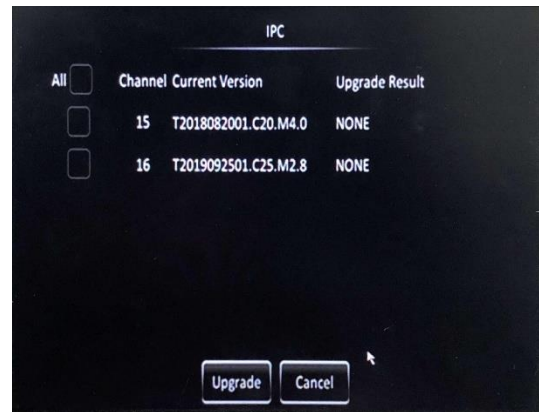


Figure 18 - IPC Upgrade List

## 4 Appendices

### 4.1 Maximum Extension Cable Length

The maximum extension cable length for any IP camera should be no more than 30 metres. See lab testing results below:

Model	Power Output	IP Camera Input	Voltage Drop	Remark
IP-1000C	12.21V	11.88V	0.33V	15m extension cable + no IR
IP-1100C	12.23V	11.19V	1.04V	15m extension cable + IR on
IP-1200C	12.23V	11.54V	0.69V	15m extension cable + IR on
Model	Power Output	IP Camera Input	Voltage Drop	Remark
IP-1000C	12.25V	11.41V	0.84V	2*15m extension cable + no IR
IP-1100C	12.16V	9.99V	2.17V	2*15m extension cable + IR on
IP-1200C	12.28V	10.93V	1.35V	2*15m extension cable + IR on

**Note:** IP camera working voltage: 9 – 16V; Switch working voltage: 11.7 – 13V.

### 4.2 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/product-support-area/mdr-storage-calculator/>

## 5 Maintenance and Testing

**This information is addressed to the operator of the vehicle where an IP camera is installed:**

- 1) Check the power supply before using an IP camera. If the IP camera is connected via a PON Switch, check if the 'IPC' LED on the PON Switch is illuminated. If the IP camera is powered by a single Power and Ethernet cable, ensure the power supply is 12V regulated. Refer to the technical specifications in Section 7 for more information.
- 2) It is strongly recommended that operators using this equipment check the system's operation at the beginning of every shift.
- 3) Keep these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

**This information is addressed to the operator for maintenance and testing of a vehicle with a Brigade IP camera 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 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 troubleshooting actions in Section 6 of this instruction guide or contact Brigade if still in doubt.

This test can only be performed when the IP camera is connected to an MDR 500 Series product. PON Switch status LEDs can help with the diagnosis procedure.

- 1) Activate the Brigade IP camera and verify a live view is displayed on a monitor from the MDR. If the IP camera has been properly set up, it will take approximately 15 – 20 seconds to display.
- 2) Alarm alert testing can be performed depending on the configuration. For instance, if Motion Detection is activated, the IP camera channel would also trigger the alarm.

## 6 Troubleshooting or FAQ

**Q:** I have installed the PON Switch, but the IP Camera does not work.

**A:** Follow this troubleshooting process:

- 1) If a Network Switch is used in the setup, check if it is powered correctly by checking the “PWR” LED on the front panel.
- 2) (*IP-1100C and IP-1200C only*) Check if the IP Camera is powered by covering the lens and listening for a faint clicking sound indicating that the IR illumination function is switched on.
- 3) Check if the connection between the MDR and IP camera works by checking the “MDVR” and “IPCx” LEDs on the Network Switch. The “MDVR” LED being illuminated means the Switch is communicating with the MDR. The “IPCx” LED flashing means the IP camera is communicating with the MDR.
- 4) Check the output channel. If the channel shows a blank background with a “No device” message, this means the channel is not configured to display an IP camera signal. Please refer to Chapters 3.1, 3.2, and 3.3 for setup procedures.
- 5) If the output channel shows a “Video Loss” message, this means either the IP address is incorrect and the MDR is unable to find the IP camera signal, or the Username and/or Password is incorrect for the IP camera, so the MDR failed to authenticate it. If you are using a Brigade IP camera, please refer to Chapters 3.1 or 3.2 to fix the issue. If you are using a non-Brigade IP camera, please refer to Chapter 3.3 to configure your IP camera.

**Q:** I am using the single power and Ethernet cable, and the IP camera does not work.

**A:** For Brigade IP cameras, please ensure the power supply is regulated to 12V DC or it may damage the camera. Refer to Chapters 3.1 and 3.2 for the process to search for the camera. If it cannot be found, then either the cable or camera could be damaged, in which case try connecting a different camera or cable to isolate the fault location. For non-Brigade cameras, ensure that the IP address of the camera is within the range 10.100.100.01 – 10.100.100.254. If so, please refer to Chapter 3.3 for the setup procedure.

**Q:** I am using a non-Brigade IP Camera, and the MDR cannot detect it.

**A:** Follow this troubleshooting process:

- 1) Confirm the IP Address and login details for your non-Brigade IP camera.
- 2) If the IP address is within the range 10.100.100.01 – 10.100.100.254, then refer to Chapter 3.3 for the setup procedure.
- 3) If the IP address is outside of the specified range, the IP address for the camera should be changed. This can be performed manually via the IP Camera web page – refer to the Web Interface Manual (6050), accessible from the Brigade Electronics website ([www.brigade-electronics.com/product-support](http://www.brigade-electronics.com/product-support)) for the procedure.
- 4) After changing the camera IP address, refer to Chapter 3.3 for the setup procedure.

**Q:** Can IP Camera IP addresses be changed via the MDR?

**A:** Yes, but only for Brigade IP Cameras. navigate to the IPC Setup page and find the camera whose IP address you wish to change. Note down its current IP address. Click Search (magnifying glass icon next to each channel). In the search results page, enable the camera, then you can freely change its IP address. Refer to Figure 19 for an example.

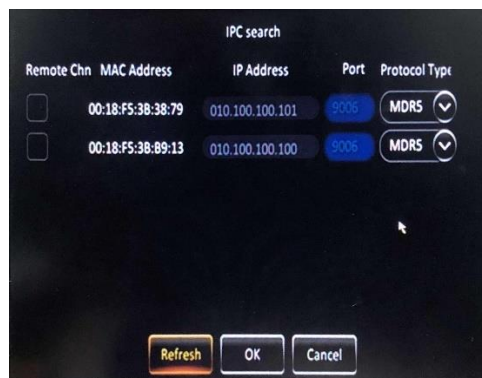


Figure 19 - Updating IP camera addresses via the MDR

## 7 Specifications

### 7.1 IP-1000C

#### Environmental Specifications

Operating Temperature Range	-40°C to +70°C
Storage Temperature Range	-40°C to +85°C
Ingress Protection	IP20
Vibration Rating	6G
Shock Rating	51G

#### Features

Mounting Directions	Front, windshield mount, cable on bottom camera housing
Camera Adjustment Range in Assembly	0° downwards to 71° (camera housing obstruction will appear below 46°)
Mirror / Normal View and Setting Method	Via web interface or MDR OSD
Network Port	100BASE-TX Ethernet (Not configurable)
Client terminal preview	Built-in WEB server; Support Chrome, Edge, Firefox, Opera browsers
Setup	Plug & Play compatibility with MDR 600 Series - MDR 600 will automatically detect and set up connected IP cameras. Compatible with MDR 500 Series - Fast setup feature available to automatically assign IP address for IP cameras. Web browser via Ethernet connection.
Microphone	Yes, integrated
Type of Connector	Brigade IPC type female connector (6-pin)
Back Light Compensation	Yes
Automatic White Balance	Yes

#### Technical Specifications

Operating Voltage	12 Vdc ± 2Vdc
Current Consumption	230mA @ 12Vdc
Viewing Angle (H / V / D)	87° / 51° / 98°
Lens Focal Length	4mm
Picture Elements (Hor. x Ver.)	1920 x 1080
Visual Resolution	1050 TV Lines
Required Minimum Luminance	0.05 Lux
Pick-up Device Type	CMOS
Video and Sound Output Signal	H.264 or H.265
Network Protocol	TCP/IP, HTTP, DHCP, NTP, FTP, ONVIF
Overall Dimensions (W x H x D in mm)	75 x 122 x 42
Weight (typ. Installed Assembly)	Approx. 240g
Material of Housing Parts	Cast Aluminium / ABS + PC Plastic
Finish	Black Pantone 426C

### 7.2 IP-1100C

#### Environmental Specification

Operating Temperature Range	-40°C to +70°C
Storage Temperature Range	-40°C to +85°C
Ingress Protection	IP67
Vibration Rating	6G
Shock Rating	51G

#### Features

Mounting Directions (typical)	Outdoor vehicle side mounted
Camera Adjustment. Range in Assembly	45° for left and right
Mirror / Normal View and Setting Method	Via web interface or MDR OSD
Network Port	100BASE-TX Ethernet (Not configurable)
Client terminal preview	Built-in WEB server; Support Chrome, Edge, Firefox, Opera browsers
Setup	Plug & Play compatibility with MDR 600 Series - MDR 600 will automatically detect and set up connected IP cameras. Compatible with MDR 500 Series - Fast setup feature available to automatically assign IP address for IP cameras. Web browser via Ethernet connection.
Microphone	No
Type of Connector	Brigade IPC type female connector (6-pin)
Back Light Compensation	Yes
Automatic White Balance	Yes

### Technical Specifications

Operating Voltage	12 Vdc $\pm$ 2Vdc
Current Consumption	190mA @ 12Vdc (IR off) 380mA @ 12Vdc (IR on)
Viewing Angle (H / V / D)	93° / 49° / 106°
Lens Focal Length	4mm
Picture Elements (Hor. x Ver.)	1920 x 1080
Visual Resolution	900 TV Lines
Required Minimum Luminance	0 Lux (IR)
Pick-up Device Type	CMOS
Video and Sound Output Signal	H.264 or H.265
Network Protocol	TCP/IP, HTTP, DHCP, NTP, FTP, ONVIF
Overall Dimensions (W x H x D in mm)	96mm x 52mm x 62mm
Weight (typ. Installed Assembly)	Approx. 360g
Material of Housing Parts	Cast Aluminium / PC Plastic
Finish	Black Pantone 426C / White RAL9003 / Clear Plastic

### 7.3 IP-1200C

#### Environmental Specification

Operating Temperature Range	-40°C to +70°C
Storage Temperature Range	-40°C to +85°C
Ingress Protection	IP65
Vibration Rating	6G
Shock Rating	51G

#### Features

Camera Adjustment Range in Assembly	Up and Down: Max. 90° Left and Right: Max. 90°
Mirror / Normal View and Setting Method	Via web interface or MDR OSD
Network Port	100BASE-TX Ethernet (Not configurable)
Client terminal preview	Built-in WEB server; Support Chrome, Edge, Firefox, Opera browsers
Setup	Plug & Play compatibility with MDR 600 Series - MDR 600 will automatically detect and set up connected IP cameras. Compatible with MDR 500 Series - Fast setup feature available to automatically assign IP address for IP cameras. Web browser via Ethernet connection.
Microphone	Yes, integrated
Type of Connector	Brigade IPC type female connector (6-pin)
Back Light Compensation	Yes
Automatic White Balance	Yes

### Technical Specifications

Operating Voltage	12 Vdc $\pm$ 2Vdc
Current Consumption	260mA @ 12Vdc (IR off) 310mA @ 12Vdc (IR on)
Viewing Angle (H / V / D)	110° / 60° / 136°
Lens Focal Length	2.6mm
Picture Elements (Hor. x Ver.)	1920 x 1080
Visual Resolution	900 TV Lines
Required Minimum Luminance	0 Lux (IR)
Pick-up Device Type	CMOS
Video and Sound Output Signal	H.264 or H.265
Network Protocol	TCP/IP, HTTP, DHCP, NTP, FTP, ONVIF
Overall Dimensions (W x H x D in mm)	102 x 58 x 96
Weight (typ. Installed Assembly)	Approx. 380g
Material of Housing Parts	Cast Aluminium / PC Plastic
Finish	Black Pantone 426C / White RAL9003 / Clear Plastic

Approvals (for each)

CE

UKCA

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

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