



Our Vision Saves Lives™

## Product Manual

V1.2  
01/2024





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## 1. Warnings

### 1.1. General

Proxicam is a pedestrian detection and alert system designed to distinguish and track humans relative to their proximity to a machine.

Proxicam notifies the machine operator with both visual and audible alerts when a pedestrian enters, or is detected within, the predefined detection zone(s).

Proxicam operates in all light conditions, including night time, but some ambient light should be available to ensure successful detection.

Proxicam is designed to identify humans only. While Proxicam is able to identify partially visible humans and human extremities in most circumstances, fully visible humans are more likely to be identified successfully.

Proxicam is not an automated system. It is an aid to the operator and does not replace the operator, operator training, operator vigilance or responsibility. The operator should not rely on the Proxicam system, and should ensure not to get distracted from their usual tasks when using the Proxicam system.

Proxicam, as with all technology, cannot guarantee 100% accuracy at all times, including false positives and false negatives. The system is an assistance only and should not be relied upon.

### 1.2. Electrical

- The Proxicam system should only be installed by an authorised or qualified technician.
- Do not connect any of the system's components when the machine's power is On.
- All system components must be connected prior to turning the machine's power On.
- The system components are not individually serviceable.
- Do not attempt to open or repair any of the components, this will void the warranty.



For product or technical support

[www.proxicam.ai/support](http://www.proxicam.ai/support)

or contact your local distributor



## 2. About This Manual

### 2.1. Intended Audience

This product manual is intended for use by product development, technical support, installation and service teams, as well as system integrators, resellers and distributors.

### 2.2. Document Scope

The main objectives of this document are to describe the value, purpose, functions, features, user interfaces and integration of the Proxicam system.

### 2.3. Related Documentation

The following documents should be used in conjunction with this manual:

- Technical Installation Guide
- Installation Portal App User Guide
- Server API Document
- Proxicam Wiring Diagrams
  - PXLED
  - PXLCD
  - DV-HUB

### 2.4. Document Version History

Revision	Author	Date	Notes
0.5	Tom Werner	12/04/2024	General additions
0.6	Tom Werner	01/07/2024	General additions
0.7	Tom Werner	25/07/2024	General additions
0.8	Tom Werner	30/07/2024	General additions
0.9	Clive Rogers	14/08/2024	Added Detection / Alert latency
1.1	Clive Rogers	9/9/2024	Added Section 6
1.2	Clive Rogers	17/01/2025	Updated DV-Hub wiring schematic. Amended wiring schematic names. Amended Product SKUs & names





### 3. Proxicam Overview

Proxicam is a pedestrian detection system with at-the-edge computer vision and object recognition capabilities. It is designed to reduce the risk of interactions with humans and machines by helping enforce safe separation distances through real-time operator alerts, as well as management notifications, reporting and video delivery via a web-based platform.

At the core of the system is the Proxicam Camera, with its embedded AI algorithms. The Proxicam Camera delivers alerts to the operator via an in-cabin LCD monitor or an LED/buzzer module, the Detection Indicator. The system also provides an output trigger to activate any external device or circuit.

The system can optionally connect with the Proxicam DV Hub, a secure, ruggedised data and video logger, which stores the event information together with video and telemetry information. The DV Hub contains a removable SSD hard drive for easy data retrieval.

Furthermore, the DV Hub can optionally connect to the Proxicam Cloud Server to store event video and deliver real-time event notifications and remote access to Proxicam detection videos via the FleetHQ web-based platform.

### 4. Main Features

#### 4.1. Human Object Classification

Proxicam's AI algorithms are trained to recognise humans in all types of complex environments. Constantly tracking their location, analysing multiple people simultaneously, while ignoring all other inanimate objects.

#### 4.2. Detection & Proximity Zones

- Proxicam's fisheye lens delivers a 170° viewing angle for ultra-wide detection coverage.
- Proxicam's detection zones are customisable and can be configured to suit all types of machines and operating environments.
- Multiple Cameras (up to 4) can be fitted around a machine

##### 4.2.1. Detection Distance

While Proxicam Cameras are able to distinguish and track humans at distances up to 20m, the recommended and optimum detection distances are:

- Up to **10m** from the Proxicam Camera
  - Up to **8m wide\***, across the face of the Proxicam Camera
- (\*varies with camera height and angle of installation)



### 4.2.2. AI Detection Rules

Proxicam's AI employs algorithms to ensure that the system accurately identifies humans while minimising false positives and false negatives. To do so, it must follow a set of rules:

- **Confidence Threshold**  
The detection confidence score must exceed a predefined threshold.
- **Bounding Box Criteria**  
The bounding box must meet specific criteria for size and aspect ratio. Bounding boxes that are too small, too large, or have unusual aspect ratios may indicate false detections. Valid bounding boxes should fit within expected size ranges for humans.
- **Non-Maximum Suppression (NMS)**  
Apply Non-Maximum Suppression to eliminate overlapping bounding boxes. When multiple bounding boxes overlap significantly, only the one with the highest confidence score is kept. This reduces redundant detections of the same human.
- **Feature Matching**  
The detected object must match key human features (e.g. head, torso, limbs). Proxicam should identify characteristic human features within the bounding box. This helps distinguish humans from other objects with similar shapes.
- **Temporal Consistency**  
Ensure temporal consistency across multiple frames - a detected human should appear consistently across consecutive frames. Sudden appearances or disappearances of detections may indicate false positives.

### 4.2.3. Detection Capabilities

While fully-visible human forms are preferred for optimum detection performance, Proxicam's AI is able to identify humans in most environments and complex scenarios, including :

- Identification of partially obstructed bodies e.g. carrying a box
- Identification of limbs and extremities
- Identification in low light and darkness

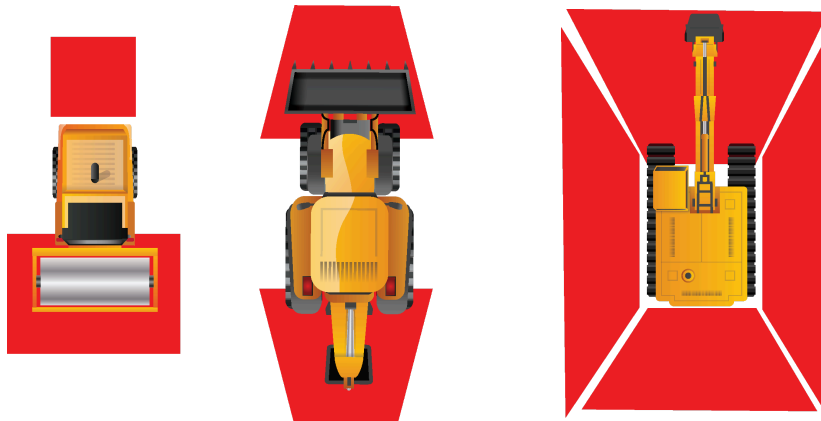
Proxicam may not operate in heavy snow or fog where visibility is limited.



#### 4.2.4. Detection Zone Patterns

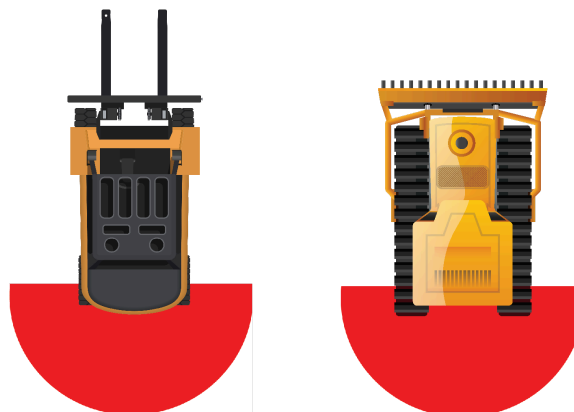
##### Horizontal

- The most commonly-used zone pattern.
- Can be configured as square, rectangular or trapezoid shapes
- Can be configured free-hand for custom-shaped patterns



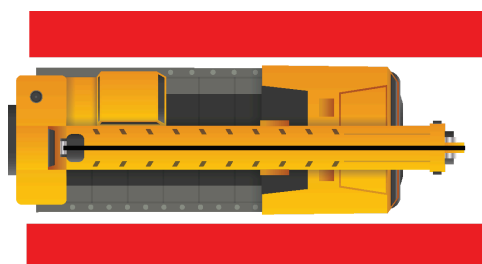
##### Semi-circle

- Arc-shaped pattern that radiates out from the Proxicam Camera.
- Suited to the rear of forklifts and skid steers.



##### Vertical

- Used for a long detection corridor alongside a machine or vehicle

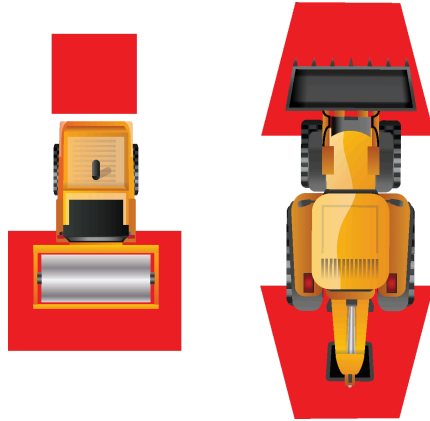




#### 4.2.5. Detection Zone Types

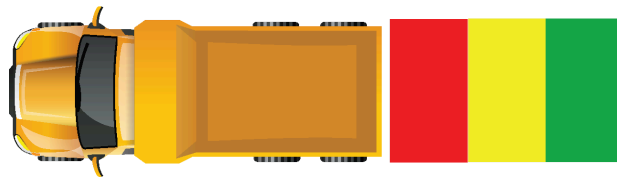
##### Single Zone

- The most common type used for exclusion zones.



##### Multi-staged Zones

- Provides a different alert frequency for each zone.
- Can only be used with the Proxicam Monitor (PXLCD)



When a person enters, or is detected within, any of these zones, the system will issue an alert to the operator, the output trigger and create an event on the DV-Hub (if optioned).

*Detection Zones can be selected and customised in the Proxicam Configuration App, using a phone or laptop and connecting to the Proxicam Camera via WiFi.*



## 4.3. Operator Alerts

Proxicam alerts the operator to detection events via:

### Monitor (PXLCD)

- Visual indicator with on-screen bounding-box overlay around the detected person(s).
- Audible alarm or spoken voice, generated from the monitors' built-in speaker.
- When using multi-staged zones, the frequency of the audible alert increases relative to the distance from the machine, in accordance with each zone.



### Detection Indicator (PXLED)

- Visual indicator via yellow LED light.
- Constant audible alert generated by the internal Piezzo buzzer.
- NOT able to issue multi-staged zone alerts.
- Suited to single exclusion zones.



## 4.4. External Alerts

Proxicam alerts the pedestrians to detection events via:

### Output Trigger

- Trigger external devices such as beacons, sirens or interfaces with other systems or circuits.
- The trigger output duration matches the output duration of the PXLED.

*The output alerts for the PXLED and the Output Trigger can be customised using the Proxicam Configuration App, using a phone or laptop and connecting to the Proxicam Camera via WiFi.*

## 4.5. Management Alerts

Proxicam alerts management via:

### FleetHQ

- Cloud-based portal for real-time notification of events, including video and asset telemetry data, dashboards and reporting (*OPTIONAL requires subscription*).

### API

- Data pushed from FleetHQ into any software or application (*OPTIONAL requires subscription*).



## 4.6. Video & Event Capture

The Proxicam DV-Hub captures both continuous and event-based video, stored locally on a removable 2.5" SSD hard drive.

### Event-Based Recording

The DV-Hub logs an event when a pedestrian enters, or is identified within one of the system's detection zones.

The logged event data and event video is sent to the Proxicam Cloud Server and FleetHQ web-portal (if optioned), when connected to the internet.

The event data includes:

- 10 seconds of recorded video following the detection event, from all 4 camera channels (irrespective of which camera triggers the event)
- Notification of which camera captured the event (Left,Right,Front,Rear)
- Asset ID
- Asset telemetry information (date / time, location, heading and speed)

### Continuous recording

The DV-Hub captures continuous video footage from all connected cameras.

Continuous recordings do not include telemetry data.

### **IMPORTANT**

Continuous recordings are not sent to the Proxicam Cloud Server.














They can be retrieved by removing the SSD hard drive from the DV Hub and connecting to a PC or laptop via USB (cable not supplied)



## 5. Proxicam Components

The Proxicam system has been designed as a modular solution:

- To reduce the number of hardware components required.
- To allow for a plug and play, easy-to-deploy system.
- To satisfy different types of machines, operational preferences and budgets.
- To reduce waste caused by unused components.

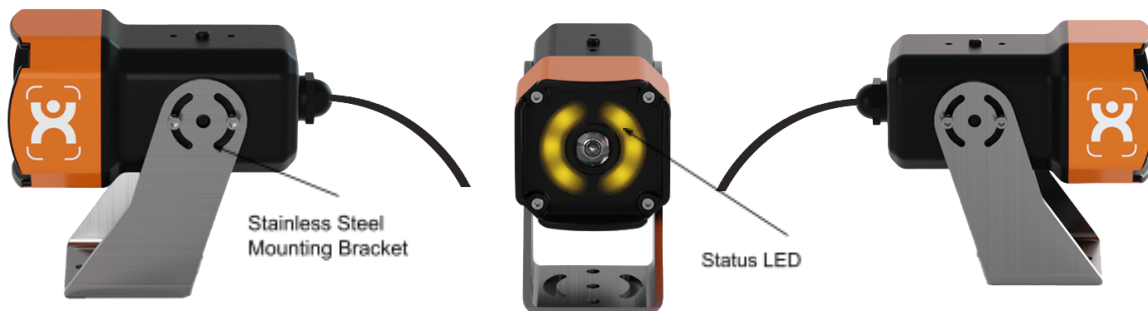
SKU	Image	Description
PXCAM-EVO		Proxicam AI Pedestrian Detection Camera with embedded object recognition technology
PXLCD		Proxicam LCD Monitor
PXLED		Proxicam Detection Indicator (LED / buzzer)
DVHUB		Proxicam DV-Hub Data and Video Logger
PXVC		In-line Voltage Regulator & I/O Controller 48V MAX
USBCAL		USB WiFi Camera calibration dongle
PXJ		4-way Camera Junction Harness
PXY		Y-Junction Harness for PXLED and/or 4PT
8PT		Power and I/O Harness
4PT		Accessory Trigger Harness with Power Out
3M-8PIN		3m Camera Extension Cable
5M-8PIN		5m Camera Extension Cable
10M-8PIN		10m Camera Extension Cable



## 5.1. Proxicam Camera

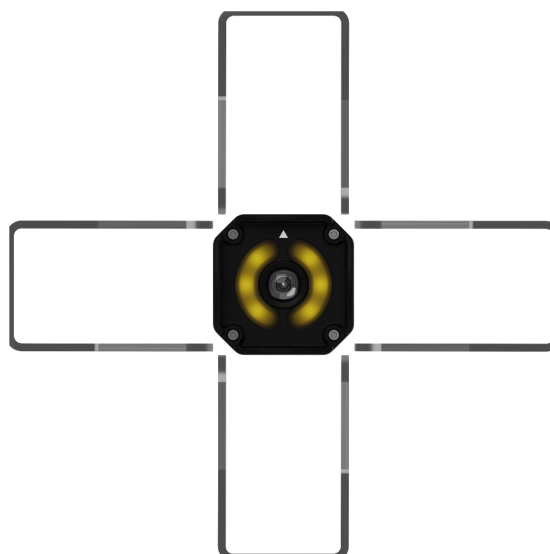
SKU: PXCAM-EVO

The Proxicam Camera is the system's eyes and brains. With its embedded intelligence and compact, robust design, the Proxicam Camera can be installed anywhere pedestrian detection is required.



### 5.1.1. Camera Mounting Options

The Proxicam Camera is supplied with a 316 stainless-steel mounting bracket that can be attached to any side of the camera allowing mounting from above, below or to the left or right sides.



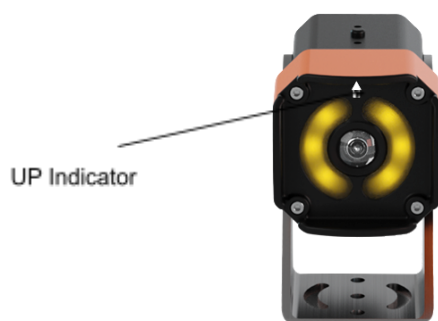




### 5.1.2. Camera Orientation

The camera MUST be mounted upright, indicated by the “UP arrow” on the front face of the camera.





**NOTE:** The image can be adjusted by the software in the Camera Configuration App (flip image horizontal or vertical)



### 5.1.3. Camera Status LEDs

The LED's, visible on the front of the camera, give visual indication of the system's status and health, denoted by the following colours and alternating colour combinations:



Start-Up		
	Initialising - Alternating Red & Yellow x 4	Ready - Blue x 3
Active		
	Blue - Constant On	
Error		
	Red - Constant On	

### 5.1.4. Cable and Connector

8-core 5mm OD cable, with 8-PIN DIN GX12 screw-lock connector with waterproof O-ring seal.



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### 5.1.5. Camera Durability

The Proxicam Camera is made from die-cast ADC12 aluminium and rated at IP69K water and dust proof. The supplied mounting bracket is 316 stainless steel.

## 5.2. Proxicam HMI & Alert Options

The Proxicam system offers the user a choice of Human Machine Interfaces and alert options to suit machine constraints, operational requirements and working environment - The Proxicam LCD Monitor and Proxicam Detection Indicator (LED).

These are used independently and cannot be used together, except when used with the Proxicam DV-Hub.

### 5.2.1. Proxicam LCD Monitor

SKU: PXLCD

The Proxicam LCD monitor enhances operator visibility with a full-colour live view from up to 4 cameras. Operators are notified of pedestrian proximity via audible alerts and on-screen indication.





### 5.2.1.1. Mounting the LCD Monitor

The Proxicam LCD monitor offers a choice of 2 mounting options:

#### U-Bracket (supplied)

The supplied U-bracket allows for secure top or bottom mounting to any flat surface.

#### Ball Joint Bracket (option)

The T-slot at the rear of the monitor allows for an optional ball joint bracket that can be attached to poles or frames.

### 5.2.1.2. Fascia Buttons

The touch buttons on the fascia of the monitor provide the following functionality:

Power ON/OFF	Volume & Menu DOWN	Volume & Menu UP	Menu Select Menu Lock	Go Back	Quick Setup

### 5.2.1.3. Display Layout Options

The Proxicam LCD monitor allows the user to customise the layout of the video feeds for all connected Proxicam Cameras. These options include:

- Single View
- Split View
- Triple View
- Quad View

The display layout can be configured via Quick Setup screen, accessed by pressing the Quick Setup button on the front fascia panel.

#### View Priority

When using multiple cameras, the system can be configured to automatically switch to a single screen on detection or on external trigger input depending on the options selected in the Quick Setup Menu

(See: [4.2.1.4. Quick Setup](#)) or the settings in the Triggers page of the main menu



#### 5.2.1.4. Quick Setup

The Quick Setup options automatically configures the monitor to the most commonly- used camera configurations and display layouts. Based on the number of connected Proxicam Cameras.

- The layout is fixed
- Visual and audible detection event notifications are active from all connected Proxicam Cameras.

1 CAMERA - FULL SCREEN		2 CAMERAS - SPLIT SCREEN		
Connected Cameras	View Layout	Connected Cameras	View Layout	
LEFT	LEFT	FRONT + REAR	FRONT	REAR
RIGHT	RIGHT	LEFT + RIGHT	LEFT	RIGHT
FRONT	FRONT	LEFT + FRONT	LEFT	FRONT
REAR	REAR	LEFT + REAR	LEFT	REAR
		RIGHT + FRONT	FRONT	RIGHT
		RIGHT + REAR	REAR	RIGHT



3 CAMERAS - TRIPLE VIEW		
Connected Cameras	View Layout	
LEFT + RIGHT + REAR	LEFT	RIGHT
	REAR	

LEFT + FRONT + REAR	LEFT	FRONT
		REAR

RIGHT + FRONT + REAR	FRONT	RIGHT
	REAR	

4 CAMERAS - QUAD VIEW		
Connected Cameras	View Layout	
LEFT + RIGHT + FRONT + REAR	LEFT	RIGHT
	FRONT	REAR

The DV-Hub will show in full-screen mode & the camera view layout will be determined by the number of Proxicam Smart Cameras connected to the DV-Hub.

DV-HUB	LEFT
--------	------

#### 5.2.1.5. Screen Lock

##### To unlock the screen and access the menu

Press the Menu icon on the bezel to bring up the password input screen and enter the password to access the main menu.

##### To lock the screen

Press and hold the Menu icon for 3 sec.

#### IMPORTANT

The password is set by the system and will only be supplied to authorised personnel. Contact your Distributor if you have not been issued with the menu lock password.

#### 5.2.1.6. Stand-By Mode

The display remains blank and only turns on with a pedestrian detection event or with a reverse or external input trigger.



#### 5.2.1.7. Cable and Connectors

27-PIN 8mm OD cable, with 4 x 8 PIN DIN screw-lock connector with waterproof O-ring seal for each camera input, 4 x trigger I/O wires, 1 x AUX/Reverse Input wire. Plus 27-PIN Male/Female extension harness.

#### 5.2.1.8. Durability

The Proxicam Monitor is water and dustproof, with an IP67 rating, aluminium and impact resistant plastic construction, plastic LCD material with silicone waterproof seals.

#### 5.2.2. Proxicam Detection Indicator (LED)

SKU: PX-LED

The Detection Indicator provides audible and visual alerts to notify the operator of pedestrian detection events and system status. It is compact and robust and can be installed anywhere.



##### 5.2.2.1. System-Ready Notification

The system will start automatically with the machine and issue a visual and audible notification when the system boot-up has completed, and the detection zones are active, with a double flash of the LED & audible tone.

#### IMPORTANT

The PXLED will **not** issue the System-Ready Notification when used with the Proxicam DV-Hub.

##### 5.2.2.2. Mounting the Detection Indicator

The Detection Indicator includes 2 mounting tabs that allows it to be attached anywhere. Locate the Detection Indicator where the LED is visible to the operator.

##### 5.2.2.3. Cable and Connector

4-core 4.8mm OD cable, with 4 PIN DIN screw-lock connector with waterproof O-ring seal.

##### 5.2.2.4. Detection Indicator Durability

The resin-filled Proxicam Detection Indicator is water and dustproof, with an IP67 rating.



### 5.2.3. Trigger Inputs & Outputs

The Proxicam system provides triggers for the purpose of activating 3rd party hardware, such as a beacon, siren or interfacing with switches and circuits.

The Trigger Output parameters are defined in the Proxicam Camera Configuration App Including:

- Active Zone(s) - Green / Yellow / Red
- Trigger output duration

See: [6. Proxicam Configuration App](#)

The trigger connections and options depend on which Proxicam accessory is being installed.

#### With the Detection Indicator (PXLED) or as a Standalone System

When using the system with the **Detection Indicator** or utilising the camera(s) as a **Standalone Sensor**, the following trigger options are available:

- Using the 4-wire 8-Pin power harness (SKU:8PT)
  - Alarm-Out Wire is High on a detection event (9.5V - 13V DC)
  - Alarm-In Wire is a conditional input switched supply (12V - 48V DC)
- Using the 4-wire 4-Pin accessory harness (SKU:4PT)
  - Alarm-Out Wire is High on a detection event (9.5V - 13V DC)
  - Alarm-In Wire has no function (Common with Alarm-In of SKU:8PT)

#### IMPORTANT

The system will not issue alerts via the Detection Indicator or Alarm-Out wire without an input voltage applied to the Alarm-In wire (Conditional switched supply).

**If detection alert is not required to be conditional (eg. alerts only while the machine is in reverse or other trigger input) then the Alarm-In wire must be joined to the B+ 12/24V supply.**

The supplied Proxicam in-line Voltage Converter and I/O Controller (SKU: PXVC) must be connected either into the Proxicam Camera directly, or into an extension harness that is connected to the Proxicam Camera.

In a setup with multiple cameras, the Voltage Converter(s) must **NOT** be connected before the Junction Harness (SKU:PXJ).

See wiring diagram: [4.5.2.1. Single Proxicam Camera](#)

See wiring diagram: [4.5.2.2. Multiple Proxicam Cameras](#)



### With the Monitor (LCD)

In a **Monitor only** installation, the following trigger options are available:

- A combined Input / Output trigger for each camera channel (Left/Right/Front/Rear)
  - Trigger Inputs activate full-screen mode for that camera
  - Trigger Outputs activate external devices on detection events logged by the connected Proxicam Camera. (requires SKU:PXTG)
- The REV/AUX Input can be configured to:
  - Switch the REAR camera view into full screen mode
  - Activate the monitor out of Standby Mode

### IMPORTANT

The Proxicam Monitor's Trigger Outputs are a very low current signal and must be used with the Proxicam Trigger Adaptor (SKU:PXTG) which will output 500mA, 11V DC for interfacing with external hardware or circuits.

See wiring diagram: [4.5.1. Proxicam\(s\) with Monitor \(LCD\)](#)

### With the DV-Hub

When using the system with the DV-Hub, the following trigger options are available:

- The DV-Hub harness - AUX/REV Input
  - Switch the REAR camera input into full screen mode on activation
- The DV-Hub harness - Trigger Output Wire
  - Positive trigger output on pedestrian detection
  - Trigger Output = 12V+, 500mA

See wiring diagram: [4.5.3. Proxicam\(s\) with DV-Hub, Monitor \(LCD\) or Detection Indicator \(LED\)](#)

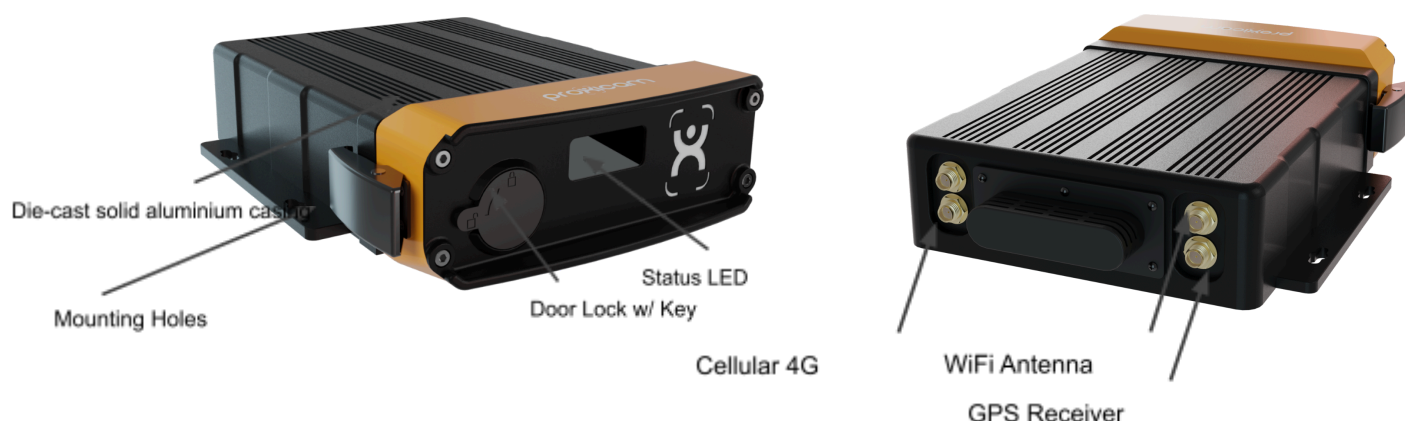




### 5.3. Proxicam DV-Hub

**SKU: DV-HUB**

The Proxicam DV-Hub is a ruggedised, data and video logger that captures constant video from up to 4 cameras, while flagging proximity detection events, indexing them locally on the device, and (optionally) sending them to the cloud for remote access and reporting.



#### 5.3.1. Data Storage

The Proxicam DV-Hub incorporates a solid state hard drive (SSD), which contains no moving parts and is capable of withstanding the vibrations and the bumps of harsh working environments.

Access to the drive bay allows for easy removal of the SSD and connection to a PC via a USB to SATA adapter (not supplied).

The maximum supported hard drive storage size is 2TB.

#### 5.3.2. Event Data Logging

The DV-Hub logs Proxicam Camera detection events, including:

- 10 seconds of video (post-event) from 4 camera channels
- Location (GPS)
- Asset ID
- Asset Speed
- Date & time of the event (UTC 0)
- FIFO principle (First In, First Out) erases the oldest video files to make space for new files and cycles indefinitely

**NOTE:** If the DV-Hub is connected to the Proxicam Cloud Server, it will push the event data and video automatically to the server for remote storage and access.

In the event that the DV-Hub does not have an internet or network connection, the events are stored on the SSD and then automatically pushed when the DV-Hub reconnects to a network.



### 5.3.3. Continuous Video Recording

The DV-Hub is constantly recording HD video;

- Records all connected Proxicam Cameras
- Records in 5 minute segments
- FIFO principle (First In, First Out) erases the oldest video files to make space for new files and cycles indefinitely

**NOTE:** The continuous footage is not uploaded to the Proxicam Cloud Server. It is only viewable by removing the SSD hard drive and connecting to a PC or laptop.

Any PC / MAC based video application can play the video files (Recommended app: [VLC](#)).

- The Continuous Video footage does not include any telemetry data. It is HD video only.
- The average recording rate is 12.5Mb per Minute, per camera.
- The average continuous recording file size is 64.5Mb per 5 min interval, per camera.
- The average event video file is 2.5Mb per 10 sec, per camera.

#### 5.3.3.1. Navigating the SSD Hard Drive Folder Structure

Continuous videos are stored in the “\normal” folder of the SSD root directory, and then folders by date, hour and then minutes. As per the below:

SSD>Normal>YearMonthDay>Hour>Minute>(Recordings)

#### 5.3.3.2. Filename Description

An example of the continuous recording file name:

20240508225912\_A4\_0011598\_0002267989\_1280\_0720\_25\_02097152\_000000000DVR123\_03\_0308040101\_04\_724\_0000447\_V02\_000\_E00\_0.mp4

Descripción del parámetro	Valor de parámetro de ejemplo	Valor traducido
Date & Time (YYYY-MM-DD-hh-mm-ss)	20240508225912	2024/05/08, 22:59:12
n/a	A4	n/a
n/a	0011598	n/a
n/a	0002267989	n/a
Video Width (pixels)	1280	1280px
Video Height (pixels)	0720	720px
Video Frame Rate (frames per second)	25	25fps
n/a	02097152	n/a
Vehicle ID	000000000DVR123	DVR123
n/a	03	n/a
Device ID	0308040101	308040101



n/a	04	n/a
n/a	724	n/a
n/a	0000447	n/a
Video Channel	V02	V00=Left, V01=Right, V02=Front, V03=Rear
n/a	000	n/a
n/a	E00	n/a
n/a	0	n/a
File Format	.mp4	H.265 codec, MP4 container

### 5.3.4. Status LEDs

The LEDs, visible on the front of the DV-Hub, provide visual indication of the system's status and health, denoted by the following colours and alternating colour combinations:

Active	
	Red & Green - Continuously Alternating

### 5.3.5. Security

The Proxicam DV-Hub's tamper-proof design includes a die-cast aluminium casing that can be bolted to any surface, secured with a lock and key (2 keys supplied)

### 5.3.6. Wireless Connectivity

The DV-Hub includes the following wireless connectivity options:

- Cellular 4G LTE
- WiFi 2.4GHz

The supplied antenna connects at the rear of the DV-Hub.

The puck-style antenna should be fixed to the vehicle in a location that will allow it to operate at optimum levels, preferably mounted on or next to the window and ensuring the antenna has a clear view of the sky and not directly covered by any metal panels.

### 5.3.7. Network Setup

To configure the DV-Hub with the carrier's network APN or local WiFi network, use the DV-Hub Setup Application on the supplied SD card and any Windows PC.

The DV-Hub Setup Application can also be downloaded at [www.proxicam.ai/resources](http://www.proxicam.ai/resources)



### 5.3.8. Durability

The DV-Hub is rated IP69K water and dust proof and meets military specification MIL-STD-810G for vibration resistance. The DV-Hub can be fixed to any surface.

### 5.4. Proxicam WiFi Dongle

SKU: USBCAL

The Proxicam WiFi dongle is used to create a direct WiFi network between the Proxicam Camera and a phone for the purpose of configuring the Proxicam Cameras.

The Proxicam WiFi dongle is a USB device that plugs into the supplied Y-harness, which is connected in-line between the Proxicam Camera and the system.



### 5.5. Voltage Converter & I/O Adaptors

SKU: PXVC

The PXVC step-down voltage converters **MUST** be connected to the Proxicam Cameras when using the Detection Indicator (PX-LED) or as a standalone system.



#### IMPORTANT

The PXVC also performs the function of a relay, providing the input / output and conditional input function of the system. The Detection Indicator (PXLED) and Trigger Outputs will **NOT** function if the PXVC is not installed.

The PXVC must **NOT** be installed when using the Proxicam Cameras together with the Proxicam LCD Monitor or DV-Hub.



## 5.5. Hardware Specifications

### 5.5.1. Proxicam Evo Camera

SKU: PXCAM-EVO

Viewing Angle	170°
Lens Focal length	1.99mm Fisheye
Detection Distance	0.5m ~ 10m
Detection / Alert Latency	±130mS
Video Output	AHD (1.0Vp-p,750 Ohm)
Communication Interface	USB2.0
Input Power	DC 10 - 32v
Rated Current	280±20mA@DC12V 300mA w/ LED active
Power Consumption	3.6W@12V
Operating Temperature	-20°~+70°C
Storage Temperature	-30°~+80°C
Dimensions	109.7×64.6×93.4mm
Weight	411g
Vibration Rating	5.9G ISO 16750-3
Certifications	FCC, CE, RCM
Resolution / Frame Rate	1920 x 1080 / 25fps

### 5.5.2. Proxicam Voltage Converter & I/O Controller

SKU: PXVC

Input Voltage	12V - 48VDC
Input Current Draw	<1.5A
Trigger IN Current Draw	<0.4mA
Trigger IN Voltage	12V - 48VDC
Trigger OUT Current Draw	500mA MAX
Trigger OUT Voltage	9.5V - 13VDC
Output Current Draw	230mA
Internal Fuse Rating	2A
Operating Temperature	-20° ~ +60°C
Dimensions	275 x 18 x 14mm
Water /dust proof rating	IP69K
Certifications	FCC, CE, RCM



### 5.5.3. Proxicam Monitor (LCD)

SKU: PXLCD

Resolution	1024 x 600
Screen Size	7" diagonal
Dot Pitch	0.516 (H) x 0.1432 (V)
View options	Single, split, triple, quad
Brightness	500 cd/m2
Contrast ratio	800:1
Viewing Angle	U/D: 70° L/R: 75°
Aspect Ratio	16:9
Video Inputs	4
Audio Inputs	4
Input Triggers	5
Trigger Priorities	5
Input Voltage	DC 10 - 32V
Power Consumption	max 25W
Operating Temp	-20°~70°C
Storage Temp	-30°~80°C
Dimension	195 x 130 x 47mm
Weight	1KG
Waterproof rating	IP66
Certifications	FCC, CE

### 5.5.4. Proxicam Detection Indicator

SKU: PXLED

Operating Voltage	9V - 16V DC
Current Draw	40mA MAX
LED Luminosity	830 mcd
Loudness (Avg)	80dB±10dB
Sound Frequency	750Hz±25Hz
Water /dust proof rating	IP67
Operating Temperature	-20° ~ +75°C
Dimensions	63(L) x 32(W) x 83(H)



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### 5.5.5. Proxicam DV-Hub

SKU: DV-HUB  
DV-HUB-USA

Input Voltage	10V - 32V DC
Alarm OUT Voltage	12V
Alarm OUT Current Draw	3.5A
Alarm IN Voltage	10V - 32V DC
Max Power Consumption	48W
Standby Power Consumption	100mW
Video Input	4 x 1080P AHD
Video Output	1 x 720P
Video Output Standard	PAL 25fps
Video Compression	H265
Audio Output	Mono
Wireless Connectivity	Cellular LTE 4G WiFi 2.4GHz + AP
Location Services	GPS
Accelerometer	3-axis sensor
Alarm IN	1
Alarm OUT	1
Data Storage	SSD Max 2TB
Security	Lock + 2 keys
Operating Temperature	-20° ~ +70°C
Anti-vibration rating	MIL-STD-810g
Water /dust proof rating	IP69K

### 5.5.5. Proxicam WiFi Dongle

SKU: USBCAL

Input Voltage	5V DC
Standard	IEEE 802.11ac,n,g,b
Interface	USB 2.0
Frequency Range	2.4GHz~2.4835GHz, 5.12GHz~5.825GHz
Wireless Speed	11ac-433Mbps 11n-150Mbps 11g-12/18/24/36/48/54Mbps 11b-1/2/5.5/11Mbps
Working channel number	1 ~ 14 (2.4G); 36 ~ 165 (5G)
Spread spectrum	DSSS



Modulation Type	OFDM/CCK/16-QAM/64-QAM
Wireless Transmit Power	20dBm(MAX EIRP)
LED	Status
Operating Environment	Operating Temperature: 0°C~40°C (32°F~104°F) Storage Temperature: -40°C~70°C (-40°F~158°F) Relative Humidity: 10%~90%RH non-condensing Storage Humidity: 5%~90%RH non-condensing

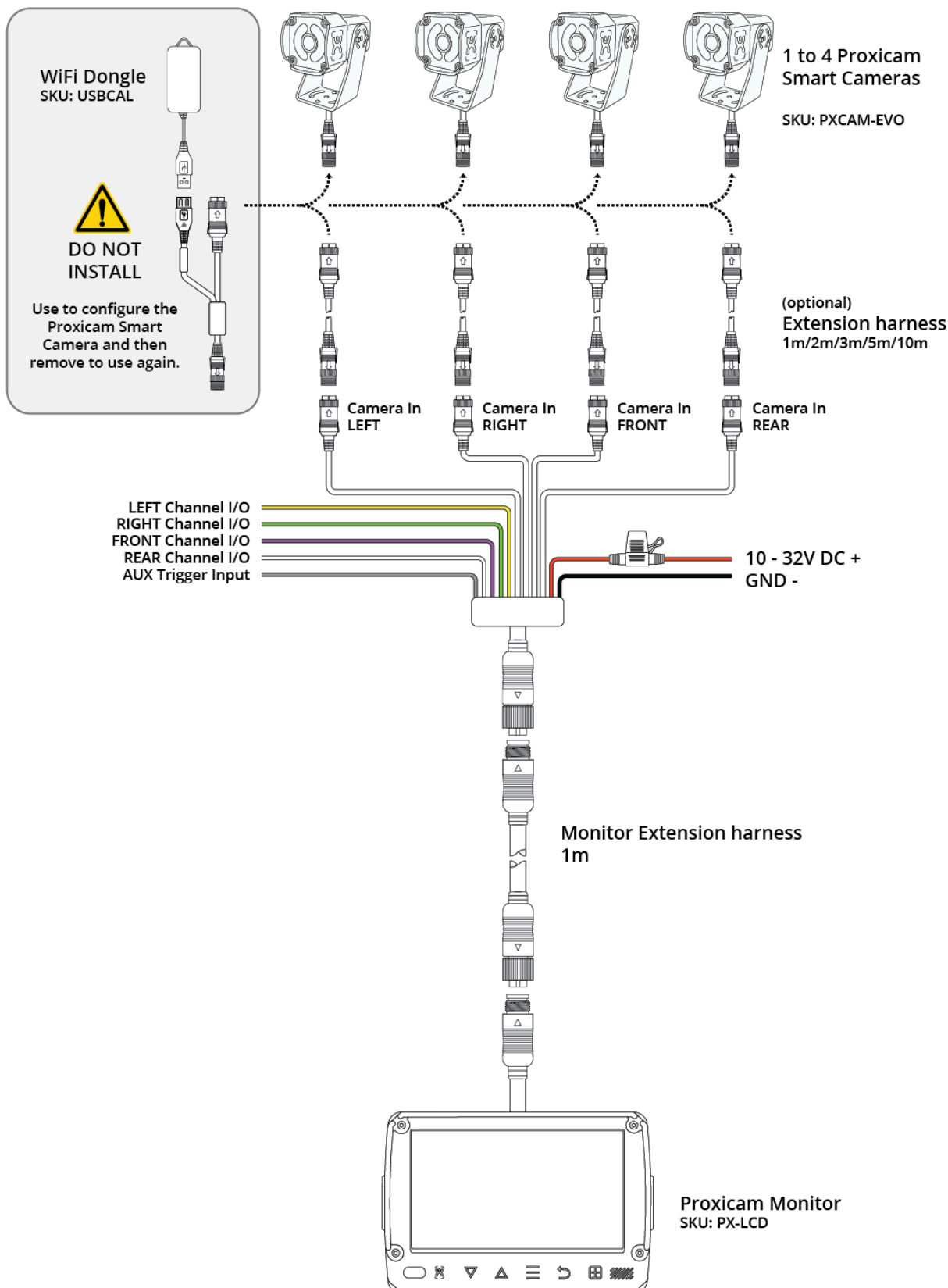




## 5.5 Wiring Schematics

### 5.5.1. Proxicam(s) with LCD Monitor

PXCAM-EVO-LCD

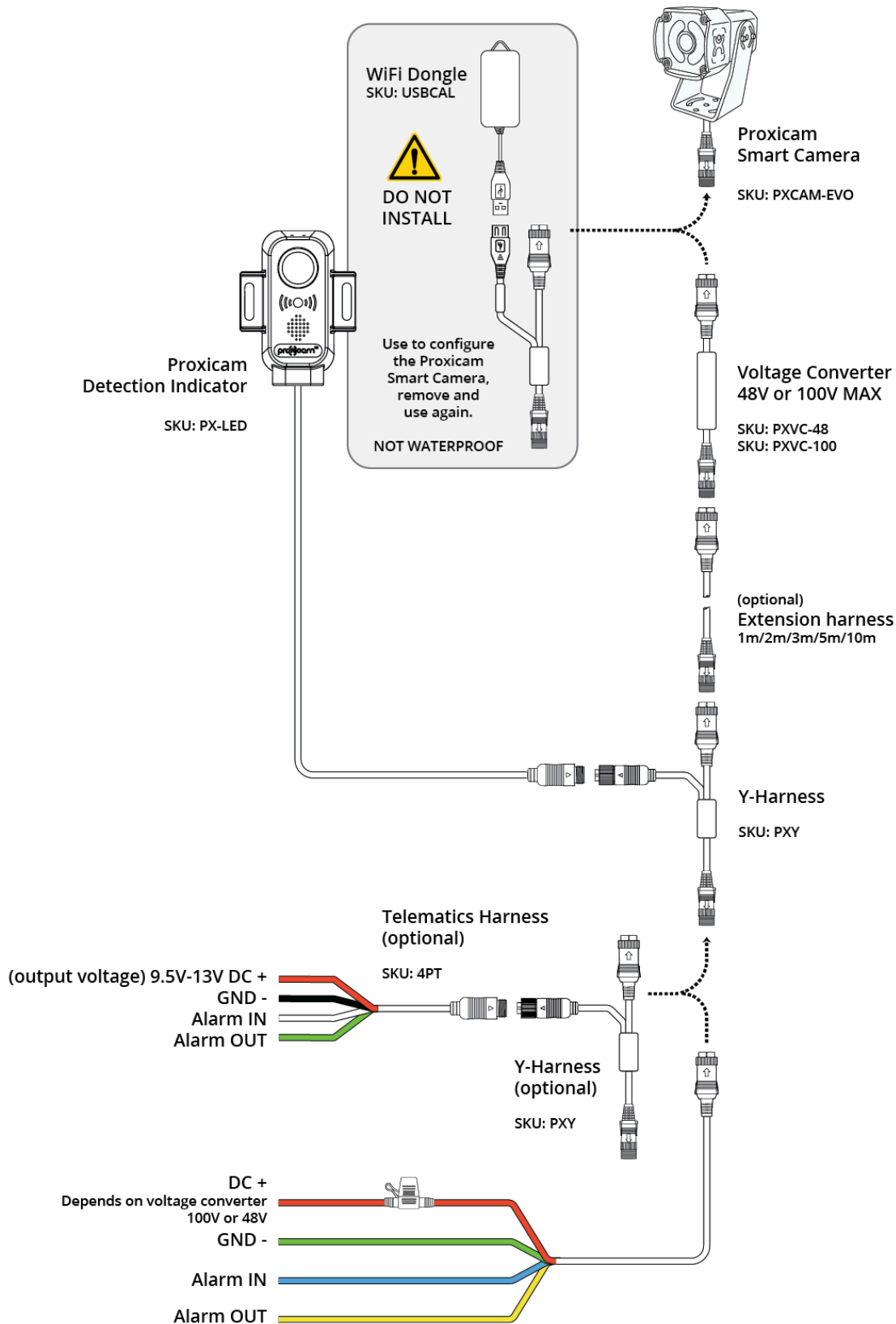




## 5.5.2. Proxicam(s) with Detection Indicator (LED)

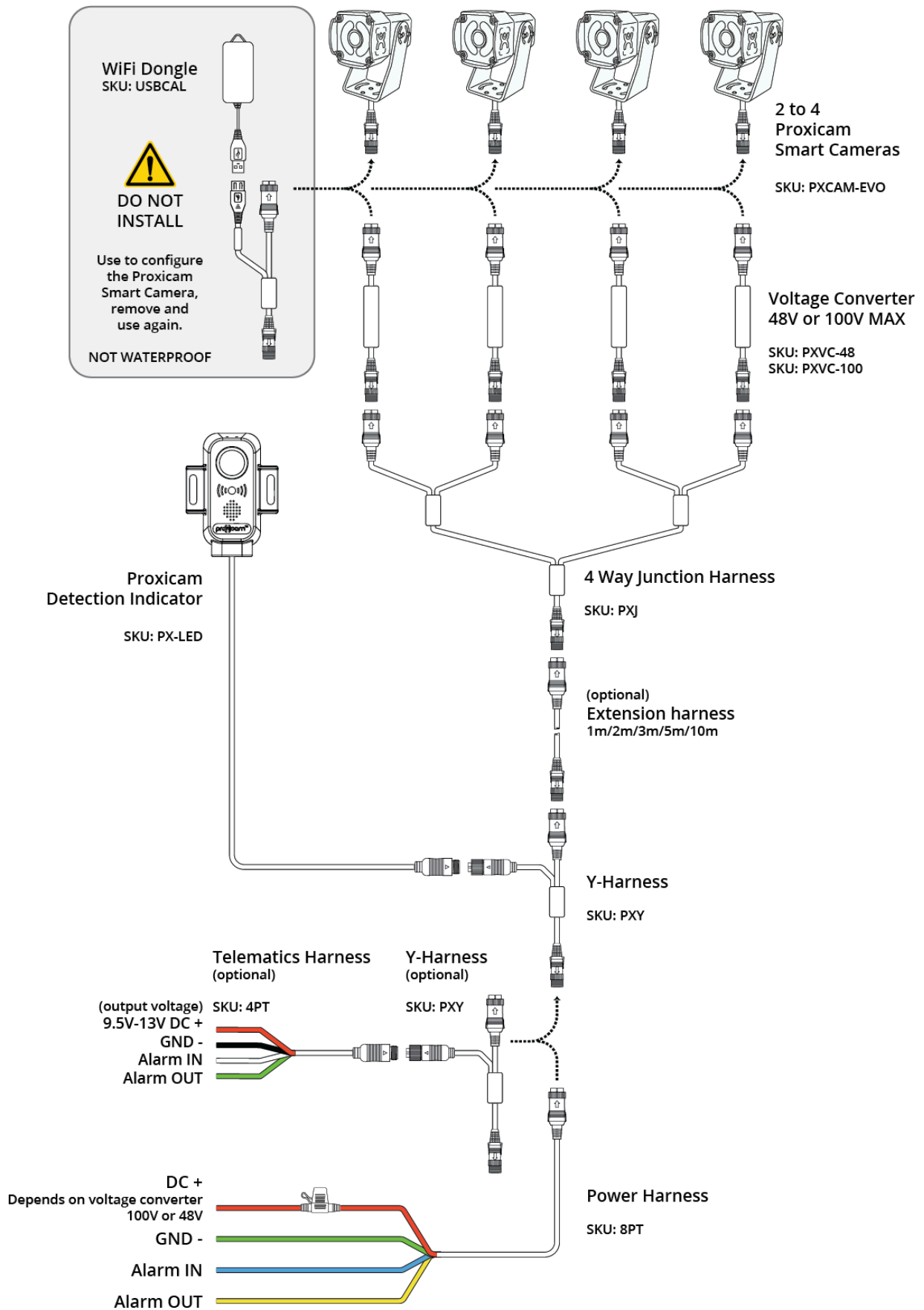
PXCAM-EVO-LED

### 5.5.2.1 Single Proxicam Camera

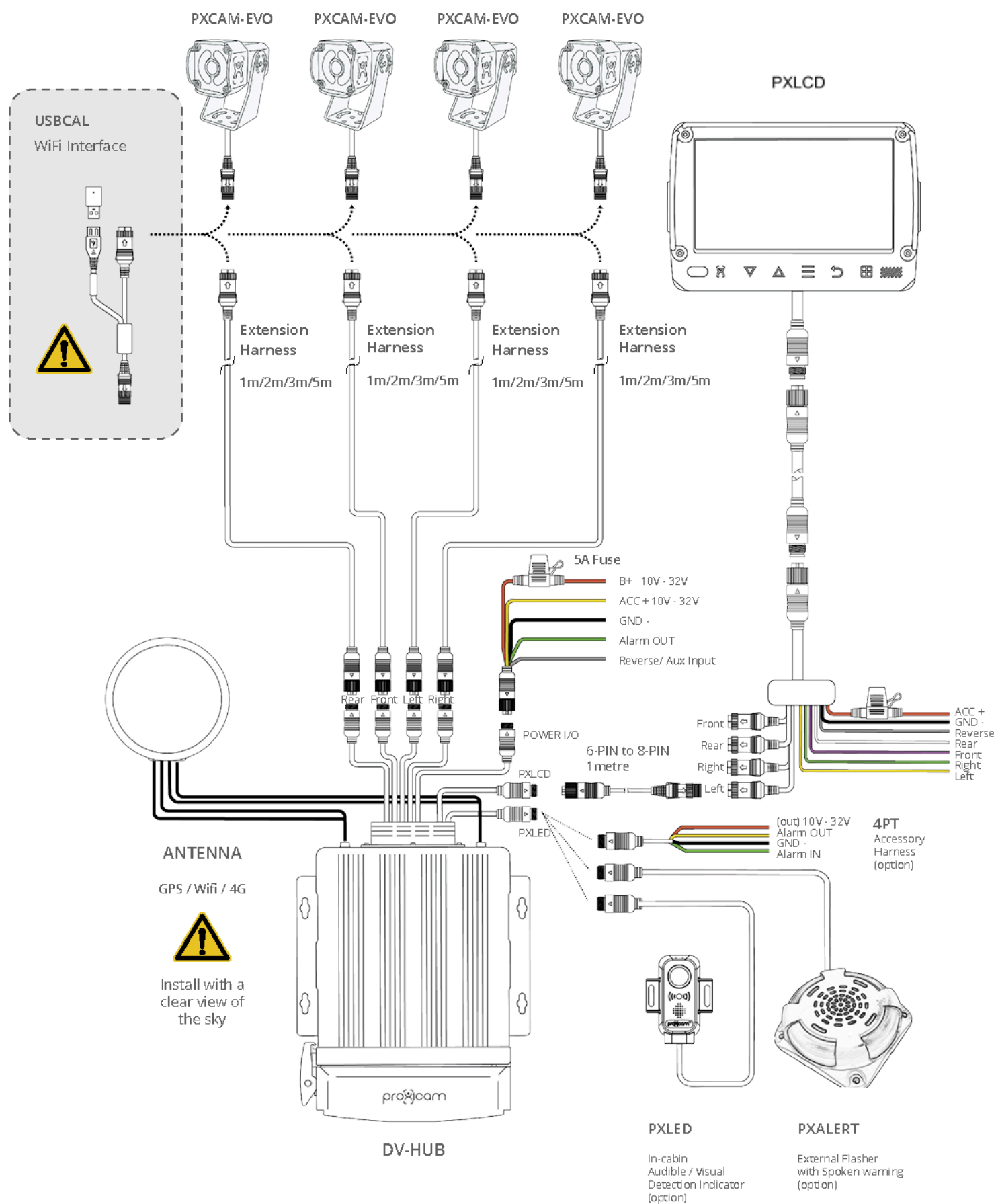




### 5.5.2.2. Multiple Proxicam Cameras



### 5.5.3. Proxicam(s) with DV-Hub





## 6. Proxicam Configuration App

The Proxicam Configuration App allows users to set up the Proxicam system, including;

- Detection Zone activation / deactivation
- Detection Zone shape, size and location
- Detection alert sound types on the LCD monitor (if included)
- Trigger output parameters
- Firmware updates, transfer configuration files and more.

The Proxicam Configuration App can be used with any phone or tablet. The App is hosted on the Proxicam Camera itself, users do not need to download or install the App on their phone. Simply connect to the Proxicam Camera via the Proxicam WiFi interface to access the App.

### 6.1. Joining the Proxicam WiFi Network.

#### 6.1.1. Install the Proxicam WiFi Interface

- Ensure that the machine's power is OFF.
- Connect the Proxicam WiFi Interface Y-Harness (SKU:USBCAL) in-line with the Proxicam Camera and the extension harness. (see wiring schematics in Section 5.5)
- Turn the machine's power ON

**NOTE:** The USBCAL WiFi interface and Y-harness are not weatherproof and must not be left connected to the system after configuration is complete.

#### 6.1.2. Add WiFi Credentials and join the Network

Using a phone, tablet or laptop, search for the following WiFi network and connect using these credentials:

**SSID:** PXCAM-\*\*\*\*\*

**Password:** pxcam123

If the device shows a notification that the WiFi connection has no internet, select the option "Always Connect" or "Keep Connection".

Some devices will continue to use mobile data when connected to the WiFi dongle as to ensure there is always an active internet connection, this feature will prevent the browser from loading the Configuration App.



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For Android (eg. Samsung) Devices

Ensure any advanced WiFi features that automatically switch to mobile data are disabled.

For IOS (Apple) Devices

Ensure WiFi Assist is disabled.

## 6.2. Accessing the Configuration App

### 6.2.1. Loading the Configuration App

Scan this QR code or enter the web address details below into your web browser to load the Proxicam Configuration App:

Web Address: <http://192.168.60.1/>

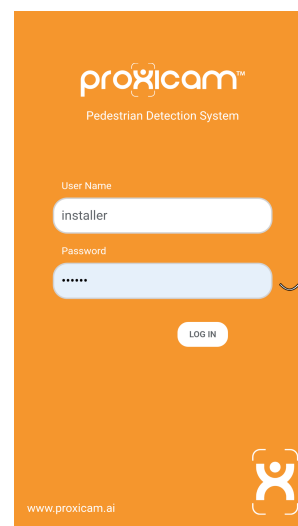


### 6.2.2. Logging in to the Configuration App

From the login screen, enter the following credentials:

**Username:** installer

**Password:** (leave empty)

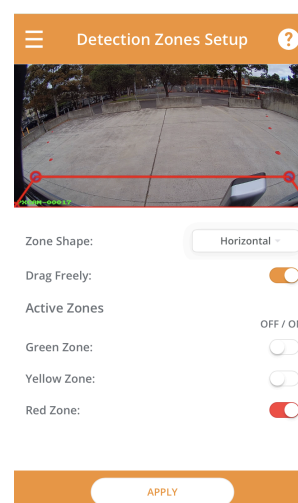


## 6.3. Detection Zone Setup

By default, the system is supplied with the detection zones **not active**. The system will not detect pedestrians until the zone(s) are activated and configured.

### Active Zones

Select which zones will be used (Red/Yellow/Green) using the corresponding switch to activate it.





## Zone Shape

Use the drop-down menu to select the required Zone Shape.  
(See: [4.2.4. Detection Zone Patterns](#))

## Drag Freely

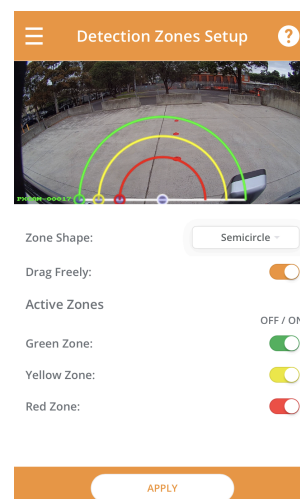
Removes the constraints of the lines and allows the zone to be set to an irregular shape.

## Configuring the Zones

To achieve realistic and accurate detection zones, relative to the machine, it is recommended to mark out the desired detection zone(s) on the ground using the supplied Zone Marker Discs.

In the App, use your finger to drag the corner of the zone(s) to the desired size and shape to match the Zone Marker Discs laid out on the ground.

Click "Apply" to save the changes.



## 6.4. Monitor Display Options

### Remove Fisheye Effect

Reduce the fisheye lens warping of the image. This will crop the top and bottom of the image to compensate.

### Mirror Camera Image

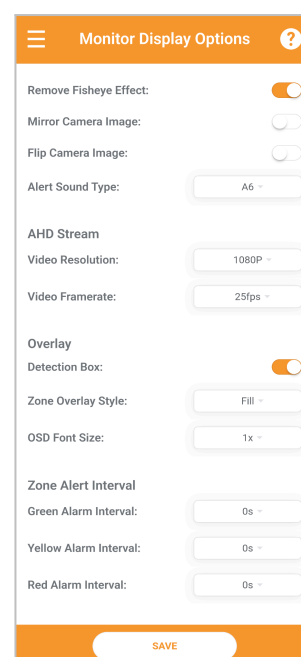
Flip the camera image on a vertical axis. Enables correct image orientation for Rear mounted cameras.

### Flip Camera Image

Flip the camera image on a horizontal axis.

### Alert Sound Type

Defines the alert tone that is sent to the monitor or DV-Hub when a pedestrian is detected. Variations of tone frequency are available to suit different working environments as well as 2 spoken alert options.





### Video Resolution

Sets the video resolution sent to the LCD monitor or DV-Hub. This should be left at maximum resolution as it does not determine the resolution sent from the DV-Hub to FleetHQ.

### Video Frame Rate

Sets the video frame rate sent to the LCD monitor or DV-Hub. By default this should be left at 25fps.

**NOTE:** Frame rate mis-match between camera and monitor or DV-Hub may cause poor video quality or distorted video image.

### Detection Box

Enable or disable the bounding box overlay shown around the detected pedestrian.

### Zone Overlay Style

Sets the visual style of the detection zone when viewed on the LCD monitor and DV-Hub recorded video.

### OSD Font Size

Sets the size of the text that's overlaid on the LCD monitor and DV-Hub recorded video.

### Green Alarm Interval

Sets the frequency of the audible alert in the green zone.

### Yellow Alarm Interval

Sets the frequency of the audible alert in the yellow zone.

### Red Alarm Interval

Sets the frequency of the audible alert in the red zone.

## 6.5. Alerts & Triggers

The Alerts & Triggers configures the output trigger from the Proxicam Camera, which:

- Activates the audible / visual alerts on the Detection Indicator (PXLED).
- Activates the external triggers connected to 3rd party hardware or machine control circuits.





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- Creates pedestrian detection events on the Proxicam DV-Hub

### Green Zone

Enable or disable the alert and output trigger of the green zone.

### Yellow Zone

Enable or disable the alert and output trigger of the yellow zone.

### Red Zone

Enable or disable the alert and output trigger of the red zone.

### Trigger Duration

Defines the minimum length of time (in milliseconds) that the output is active when pedestrians are detected.

The default value is 200ms.

Alerts & Triggers

Green Zone: OFF / ON

Yellow Zone: OFF / ON

Red Zone: ON

Trigger Duration: 200ms

SAVE

## 6.6. System Settings

### Serial

Displays the serial number of the camera.

### Firmware

Displays the firmware version of the camera.

### HW Rev.

Displays the hardware revision of the camera.

### Import Config

Import a configuration file of the camera.

### Export Config

Import a configuration file of the camera.

### Export Log

Export a system log from the camera.

### Reset to Default

Perform a factory reset of the camera

System Settings

Serial: 241300011

Firmware: 20240716.4904

HW Rev.: PXCAM

Import Config: IMPORT

Export Config: EXPORT

Export Log: DOWNLOAD

Reset to Default: RESET



## 7. End User Terms Of Use

PLEASE READ THIS PRODUCT MANUAL AND THE IMPORTANT SAFETY INSTRUCTIONS / WARNINGS BELOW CAREFULLY BEFORE USING THE PROXICAM PEDESTRIAN DETECTION AND ALERT SYSTEM ("Product")

By using the Proxicam system "the Product ", you will be acknowledging and agreeing to operate the Product in accordance with the Safety Instructions and Warnings set forth below. If you do not agree to these terms, please return the Product to your distributor, reseller, dealer or advise your asset manager.

- Installation must be carried out by an Authorised Proxicam Distributor, Reseller or Accredited Installer in accordance with the Proxicam Installation Portal and Proxicam Wiring Guides
- The Product should not be removed or transferred between assets, other than by an Authorised Proxicam Distributor, Reseller or Accredited Installer.
- Do not cover or obstruct any of the Proxicam system components, including the Proxicam Camera(s), the monitor (LCD), or Detection Indicator (LED).
- Do not use the Product for any purpose other than as described in the Product Manual or Operator's Guide.

### Warning

- The Product is a pedestrian detection and alert system designed to distinguish and track humans relative to their proximity to a machine.
- Proxicam is not an automated system. It is an aid to the operator and does not replace the operator, operator training, operator vigilance or responsibility. The operator should not rely on the Proxicam system, and should ensure to not get distracted from their usual tasks when using the Proxicam system.
- Proxicam, as with all technology, cannot guarantee 100% accuracy at all times, including false positives and false negatives. The system is an assistance only and should not be relied upon.
- Operators should exercise caution when using the Proxicam LCD monitor and not get reliant upon it, nor distracted by it.
- The Proxicam system may include components that capture video recordings and/or asset location.



- Should the Product's Output Trigger be interfaced with machine control circuits, due care and caution should be taken.

## 7.1. Limited Use Licence

- The owner / user is hereby granted a non-exclusive licence to use the software embedded in the Product, as well as the documentation accompanying the Product.
- Owner / user shall not: (a) modify, adapt, alter, translate, or create derivative works from any software residing in, or provided in conjunction with, the Proxicam Product, (b) reverse assemble, decompile, disassemble, or otherwise attempt to derive the source code for such software without written authorisation, (c) assign, sublicense, lease, rent, loan, transfer, disclose, or otherwise make available such software, or (d) remove proprietary notices on Product or Documentation.

## 7.2. Limitation of Liability

To the fullest extent permitted by law, including the Australian Consumer Law (which is Schedule 2 to the Competition and Consumer Act 2010 (Cth)), the Manufacturer shall not be liable for any indirect, incidental, special, consequential, or punitive damages, or any loss of profits or revenues, whether incurred directly or indirectly, or any loss of data, use, goodwill, or other intangible losses, resulting from (a) your use or inability to use the Product; (b) any unauthorised access to or use of our servers and/or any personal information stored therein; (c) any interruption or cessation of transmission to or from the Product; (d) any bugs, viruses, trojan horses, or the like that may be transmitted to or through the Product by any third party; (e) any errors or omissions in any content or for any loss or damage incurred as a result of the use of any content posted, emailed, transmitted, or otherwise made available through the Product; and/or (f) the defamatory, offensive, or illegal conduct of any third party.

Furthermore, the Manufacturer shall not be liable for any injury or damage caused to the machine or property resulting from the Products's machine control intervention, as stated in the End User Terms Of Use Warnings..

## 7.3. Governing Law

These terms shall be governed by and construed in accordance with the laws of the State of NSW, Australia, without regard to its conflict of law principles. Any disputes



arising out of or in connection with these terms shall be subject to the exclusive jurisdiction of the courts of NSW, Australia.

## 7.4. Consumer Guarantees

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure as per the Warranty Statement.

## 7.5. Contact Information

For any questions or concerns regarding these terms of use, please contact the Manufacturer of Proxicam, FleetSafe via telephone at +61 2 9436 1121 or email [hello@fleetsafe.com.au](mailto:hello@fleetsafe.com.au)



## 8. Warranty Statement

This Warranty is provided by the Manufacturer of Proxicam. It is separate from and additional to any statutory warranty owed by suppliers/manufacturers under the Australian Consumer Law (which is Schedule 2 to the Competition and Consumer Act 2010 (Cth)). Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

### 8.1. Express Warranty

Without prejudice to any statutory warranty to which the owner may be entitled under the Australian Consumer Law and unless such law provides for a longer term:

**The Product Warranty (the "Express Warranty")  
covers the owner of the Product(s) against defects in material for a period of  
three (3) years from the Invoice date.**

Proof of original purchase may be required from the warranty holder to obtain Express Warranty coverage. The sole obligation of the Manufacturer under this Express Warranty is to repair or replace, at its option, any Product, which is determined by the Manufacturer to have been defective.

### 8.2. Express Warranty Exclusions

The following are excluded from the Express Warranty:

- Product(s) that have been damaged from misuse, negligence, accident, removal, or improper installation.
- Product(s) that have been installed or used in a vehicle other than the vehicle for which the Product was allocated.
- Product(s) that have been repaired, modified, or altered by any party other than an authorised representative of the Manufacturer.
- Product(s) that are not the Products sold by the Manufacturer or an authorised representative of the Manufacturer.
- Product(s) that have been used other than in accordance with the associated Product Manual or documentation provided by the Manufacturer.



### 8.3. Express Warranty Disclaimer

This Warranty and the statutory warranties provided under the Australian Consumer Law are the sole and exclusive warranties applicable to the Product(s). The Manufacturer and any authorised representatives disclaim all other express warranties of merchantability and fitness for a particular purpose, to the fullest extent permitted by applicable law. No representation or warranty of any kind or nature is made by the Manufacturer or any other authorised representative beyond those expressly stated herein or which are provided under the Australian Consumer Law.

To the fullest extent permitted by law, including the Australian Consumer Law, neither the Manufacturer nor any other authorised representative shall be liable for any special, collateral, indirect, punitive, incidental, consequential, or exemplary damages in connection with or arising out of the use of the Product. Without limiting any provisions limiting liability under this Agreement but subject to any rights under the statutory warranties provided under the Australian Consumer Law, the warranty set forth herein will not apply if:

- The Product has been used other than in accordance with this Express Warranty, the Product Manual and documentation or other written operating instructions or has been subject to negligence or accident by anyone other than the Manufacturer or any other authorised representative or product or parts identification labels are removed or altered; or
- The Product has been modified, repaired, serviced, maintained, or altered by anyone other than the Manufacturer or an authorised representative of the Manufacturer; or
- The Product has been combined with software, hardware, or other equipment not supplied by the Manufacturer, or any other authorised representative;
- The Product has been installed not in accordance with the Installation Portal, Product Manual and Wiring Guides provided by the Manufacturer, or other authorised representative; or
- The Product has been damaged by causes beyond the control of the Manufacturer, or any other authorised representative; or
- The Product has been modified without the Manufacturer's written consent; or
- Used by a person other than (i) the original purchaser or (ii) any other person who is authorised by the actual original purchaser provided that such user made aware of the "END USER TERMS OF USE".

### 8.4. Claim Procedure

To make a claim under this Warranty, please contact the Distributor, Reseller or Retailer you purchased the system from. You will need to provide proof of purchase and details of the defect. Any costs associated with returning the product will be borne by the user. The Manufacturer will assess your claim and advise of the next steps.



## 8.5. Limitation of Liability

To the extent permitted by law, including the Australian Consumer Law, the Manufacturer's liability is limited to the repair or replacement of the Product or the supply of equivalent products. In no event will the Manufacturer be liable for any indirect, special, incidental, or consequential damages.