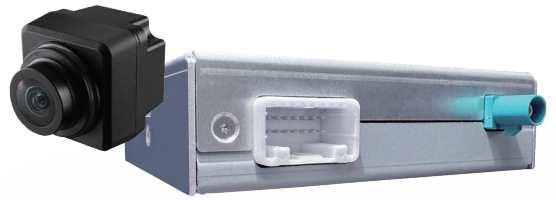# AI區域安全感測系統 – SafeZone
SafeZone - Regional Safety AI Sensing System

產品描述
Product Description

不同的應用場景會有不同的危險發生，歐特明利用各種場景中的安全區域界定，安裝視覺感知模組來輸入影像，再透過視覺AI辨識技術即時分析，精準辨識不同應用場景中的目標物如乘客、工作人員、弱勢用路人等，以確保各個場景中的人員安全，避免意外傷害。

Different scenarios come with unique safety challenges. SafeZone leverages advanced safety zone definitions and integrates visual perception modules to capture real-time images. With cutting-edge AI visual recognition technology, the system precisely identifies key subjects such as passengers, staff, or vulnerable road users in various applications. This ensures safety across all environments and helps prevent accidental injuries.

案例 – 公車車門防夾應用
Applications – Anti-Pinch System for Bus Doors

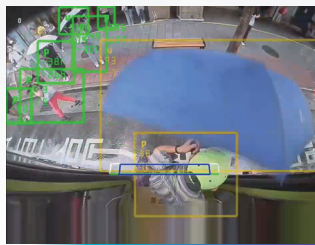此安全系統包含歐特明提供感知控制器及視覺感知模組，另外搭配車門控制器，此系統可以主動偵測車門範圍附近是否有人員，避免人員被車門關閉所夾傷或發生其他受傷事件。

This safety system includes oToBrite's sensing controller and visual perception module, paired with a door controller. The system proactively detects the presence of individuals near the bus door area to prevent injuries caused by the doors closing.

產品特點
Product Features

· 車門開啟時，系統主動偵測車門外30公分
  Detects a 30 cm area outside the bus door when it opens.
· 當系統偵測到有乘客時，車門便無法關閉
  Prevents the door from closing if a passenger is detected.
· 車門關閉後，系統即停止偵測
  Stops detection once the door is fully closed.
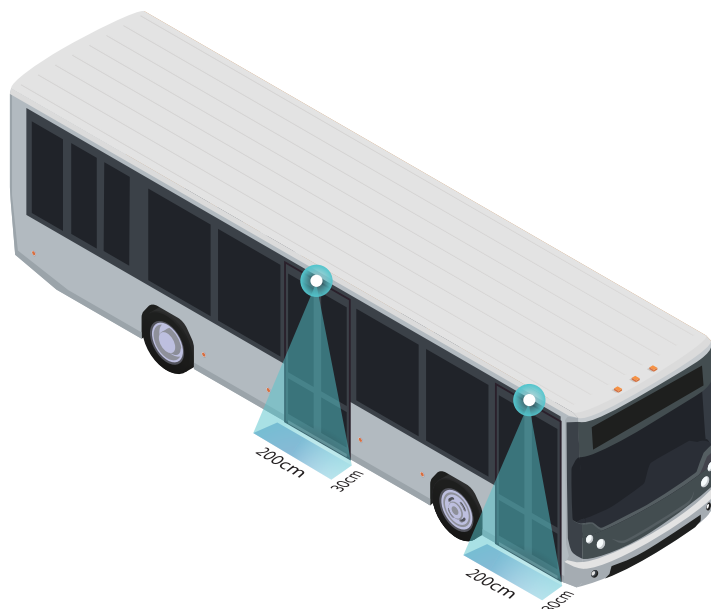
◉ 大量人潮
Large crowds

◉ 撐傘的人
people carrying umbrellas

◉ 部分身體被遮蔽的人
Partially obscured person

系統偵測範圍與觸發條件
System Sensing and Detection Trigger Conditions

· 目標物：乘客
  Target Object: Passengers

· 必要偵測觸發範圍：車門外 200 cm x 30 cm
  Required Detection Trigger Area: 200 cm x 30 cm outside the bus door.

· 描述：車門外30公分內偵測到乘客就不關門
  Description: The system detects passengers within 30 cm outside the bus door and prevents the door from closing.
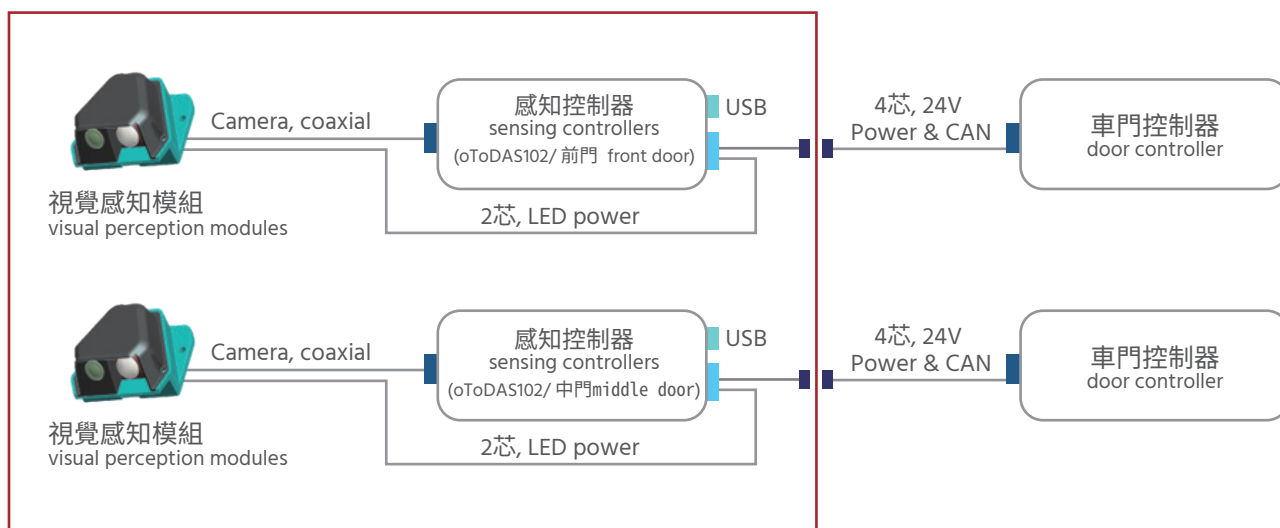

產品組成
Product Portfolio

歐特明提供以下列紅框內的產品，包括感知控制器，視覺感知模組，和紅框內線束，以下配置為前門/中門各一套

Provides the Following Products:
Including sensing controllers, visual perception modules, and wiring harnesses within the red box. The configuration includes one set for the front door and one set for the middle door.

其他案例 – 各類工程車車身周圍安全區域偵測
Other Applications – Surrounding Safety Zone Detection for Various Construction Vehicle

· 工程車啟動時開始偵測安全區域內是否有人員
  The system begins detecting the safety zone for personnel when the construction vehicle is started
· 如在安全區域內偵測到人員即發出警示
  If a person is detected within the safety zone, an alert is immediately triggered

其他案例 – 垃圾車車尾斗防夾應用
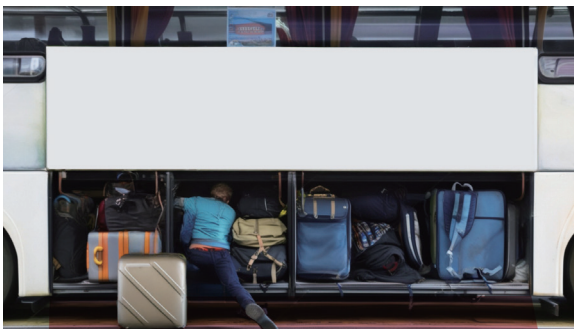## Other Applications – Anti-Pinch System for Garbage Truck Tail Hoppers

· 按下尾斗開關時，系統主動偵測車尾斗附近
  When the tail hopper switch is pressed, the system actively detects the area around the tail hopper
· 當系統偵測到有人員時，車尾斗便無法關閉
  If the system detects a person nearby, the tail hopper will not close

其他案例 – 巴士行李箱防夾應用
Other Applications – Anti-Pinch System for Bus Luggage Compartments

· 巴士在停車後，打開行李箱時，系統偵測行李箱四周
  After the bus is parked, the system detects the surroundings when the luggage compartment is opened
· 當系統偵測到有人員時，行李箱便無法關閉
  If the system detects a person nearby, the luggage compartment will not close
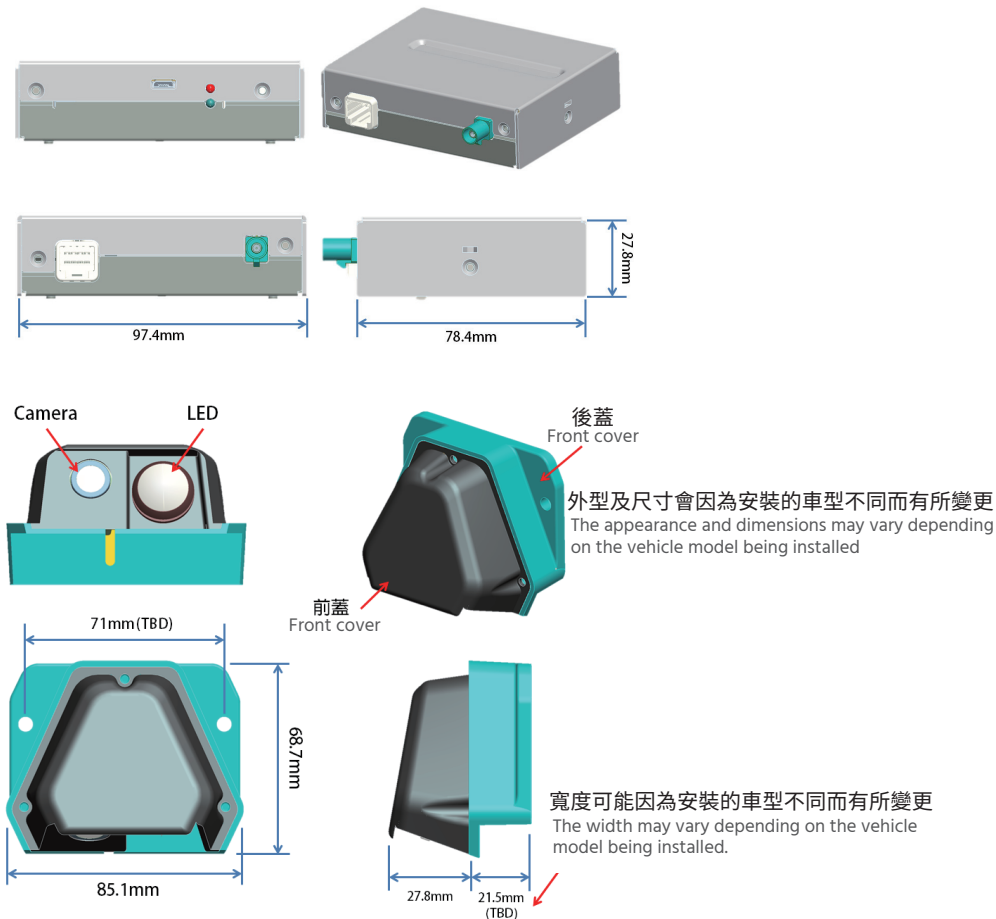
產品規格 (視不同應用而定)
Product Spec. (Customized for different applications)

感知控制器 (oToDAS102) Sensing controllers	規格 Specification
電壓範圍 Voltage Range	16V~32V
作動溫度 Operation Temperature	-20℃ ~ +70℃
儲存溫度 Sensing controllers	-20℃ ~ +75℃
防塵防水等級 Ingress Protection Rating	IP51

視覺感知模組 (oToCAM206-L137T+LED Lamp) Visual perception modules	規格 Specification
操作溫度 Operating Temperature	-20℃ ~ +70℃
儲存溫度 Storage temperature Range	-20℃ ~ +75℃
防塵防水等級 Ingress Protection Rating	IP69K (鏡頭本體 Camera)
燈組 LED Lamp	因應夜間感知功能視情況加裝LED燈 In response to the night sensing function, LED lights can be installed depending on the situation

輪廓圖
Outline Drawing

27.8mm

97.4mm

78.4mm

Camera　LED

71mm(TBD)

後蓋
Front cover

外型及尺寸會因為安裝的車型不同而有所變更
The appearance and dimensions may vary depending on the vehicle model being installed

前蓋
Front cover

68.7mm

85.1mm

27.8mm　21.5mm (TBD)

寬度可能因為安裝的車型不同而有所變更
The width may vary depending on the vehicle model being installed.

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