

AI BOX[®]

FOR ADVANCED DETECTION

INTRODUCTION

What is AI?

Artificial intelligence, or deep learning, is a **neural network** with multiple layers. These neural networks attempt to mimic the behavior of the human brain, allowing it to “learn” from large amounts of data.

Within the security industry, deep learning is a **cutting-edge solution** for current and future security systems. For instance, our AI Box uses deep learning and analysis to recognize and classify detected objects, including people, vehicles, motorcycles, bicycles, and more.

What are AI analytics and how are they used?

AI analytics takes in data to help to prescribe a solution to an event that has occurred. It finds insights and patterns in data that sometimes humans are not able to catch.

For instance, with our AI Box, our system **receives** the data from the existing security cameras, **learns** that a person has breached a perimeter, and can be **programmed** to set off an alarm or to initiate other actions.

AI BOX - Key Features

- Cutting-Edge proprietary **Deep Learning** AI engine
- Various **AI analysis** support: 'Intrusion', 'Occupancy', 'Loitering', 'Enter/Exit', 'Line Crossing', 'Behavior Analysis' and more
- Compatible with **existing** Onvif-based VMS, NVR/DVR and Alarm monitoring system or it can be used in RTSP mode
- Integrated in **CORTROL, Immix, Sentinel, Safestar, Kronos**, and more

AI BOX Setup

Sample System Overview



Remote Video Monitoring Center

Event

AI BOX



Recorder



Cameras

Receives & analyzes streams to send only "positives" while removing false positives

Alarm System



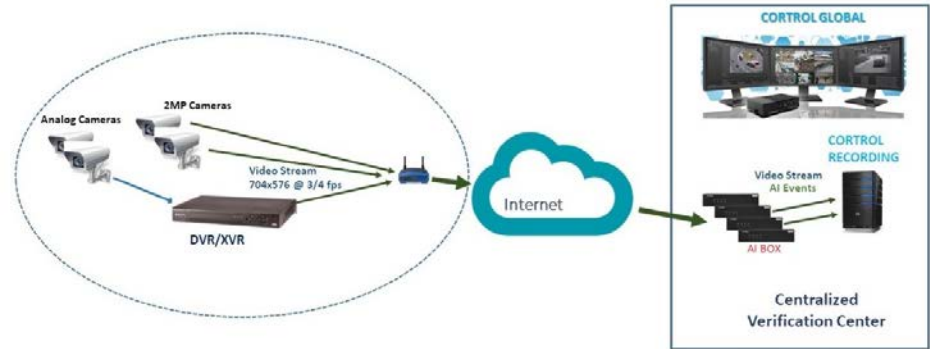
Case Study

A large remote monitoring service company with clients ranging from Commercial establishments, to high net worth individuals and private residences, introduced a new concept.

In order to provide a **cost-effective AI solution**, they implemented a Centralized Verification Service called **AI Cloud**. This competes with other cloud solutions based on a subscription rate where costs could quickly escalate.

A number of 16-Channel AI Boxes were installed at a centralized location over the Internet. This provided an **analytics solution** at a **low price** for remote sites with few cameras (1-6) with low video stream (704x576@3fps). Due to the ROI it presents, the solution is quickly gaining traction.

Central AI Verification Station



Classifications, Options, Customization, & Behaviors



Built-in features

 Object Detection	 Object Tracking
 Line Crossing	 Loitering
 Enter / Exit	 Stopped

Classifications

		
Human	Vehicles	Bike

Options (Ready)

 Face Recognition	 LPR
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Options (Customization)

					
Vehicle types			Animal	Helmet	Clothes

Options (Behavior's customization)

 Eating	 Drinking
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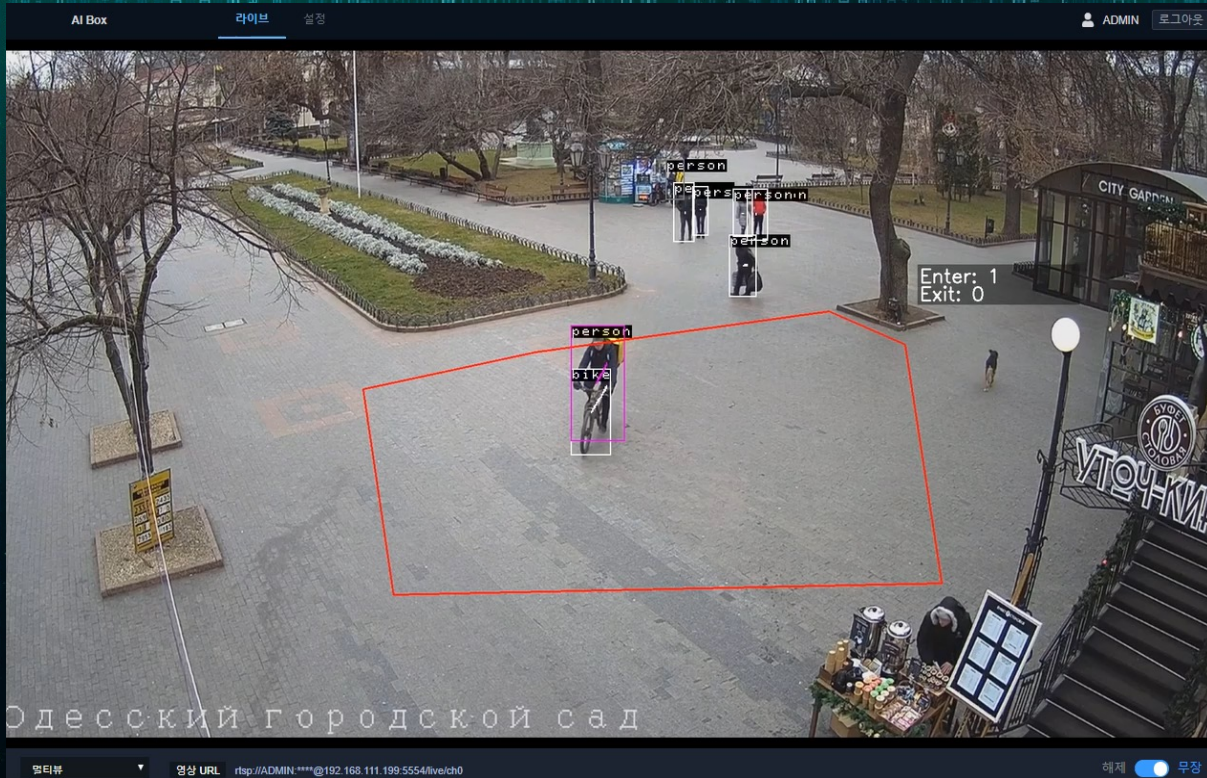
Loitering / Detection of Humans



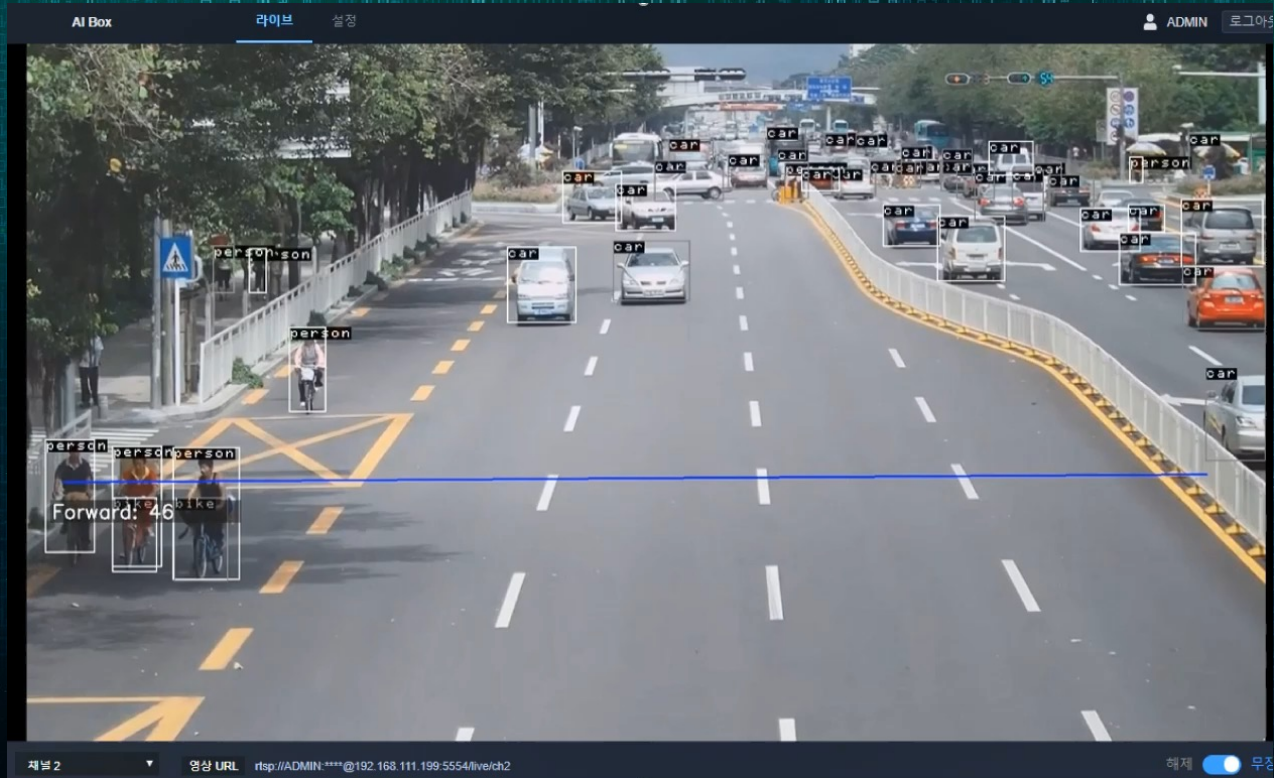
Virtual Fence (Military Applications / Human Detection)



Exit & Enter Detection

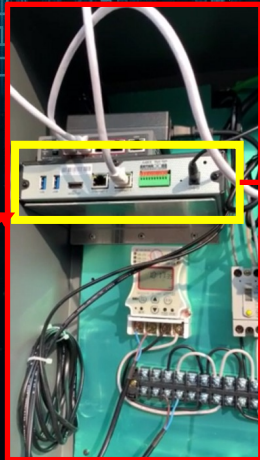


Object Counting/Cars



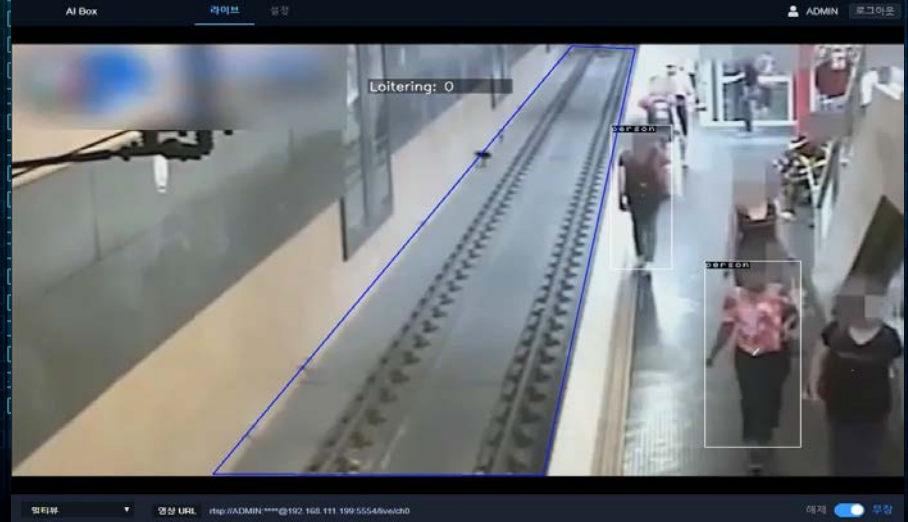
Safety – People Detection

* Digital Signage alarms "Caution: Humans" message, when people accessed



Public Transportation

- Enter/ Exit



Theft Detection



Other Capabilities

- Object Classification (Humans/Cars/Bikes)
- Virtual Fences in Difficult Conditions (Low Light Sensitivity)
- Occupancy Management/ (ex: 1 person/4 people)
- Fast Object Classification (ex: speeding cars)
- Illegal Parking Detection
- Multiple Rules: Loitering & Virtual Fence Combination
- Boats– Alarm Notifications for Fallen People
- National Park Enter/Exit Management
- Wrong-way Driving Notification
- Railway Crossing Notification
- Multiple Channel Object Notifications
- Notification for Prohibited Objects in Playground

Ganz AI Box – Options

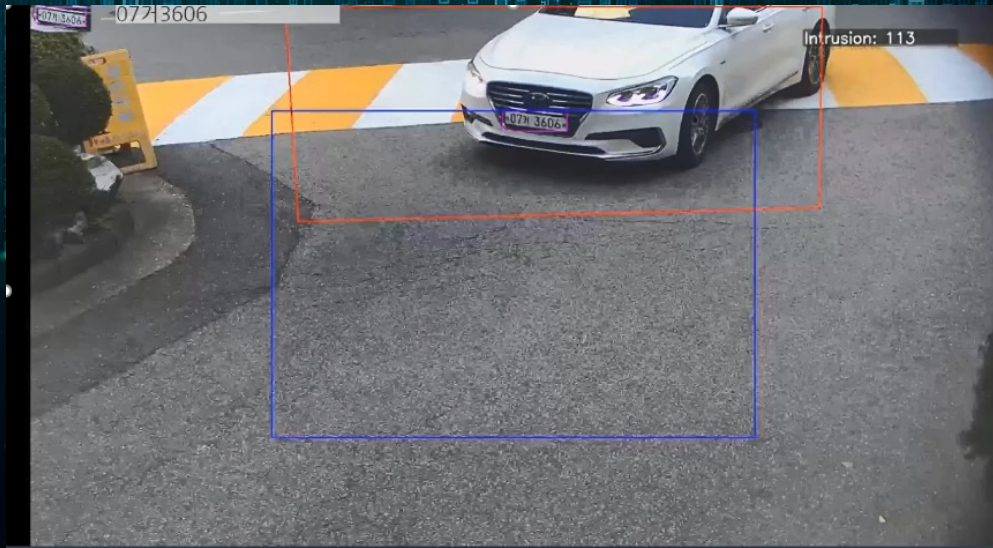


An aerial, black and white photograph of a busy pedestrian crossing. The crossing is marked with white zebra stripes on a dark asphalt surface. Numerous people are captured in motion, crossing the street in various directions. The image has a high-contrast, slightly blurred quality, emphasizing the flow of traffic. The text "Q & A" is overlaid on the left side of the image.

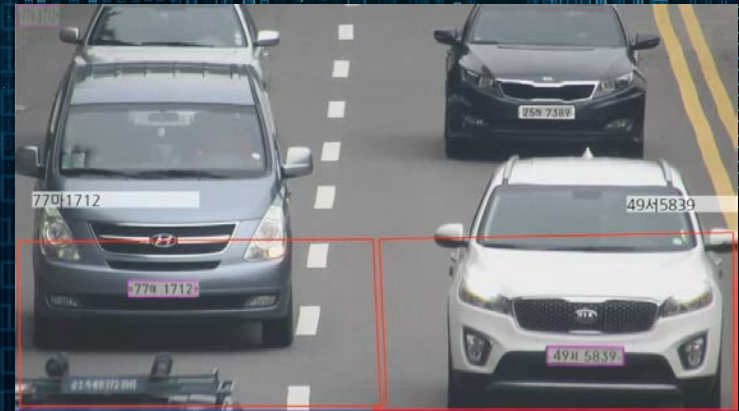
Q & A

License Plate Recognition (LPR)

* LPR engine recognizes characters & number by OCR type files to be figured out from any recorder systems.



Multiple plates recognitions from 1CH



Face Recognition

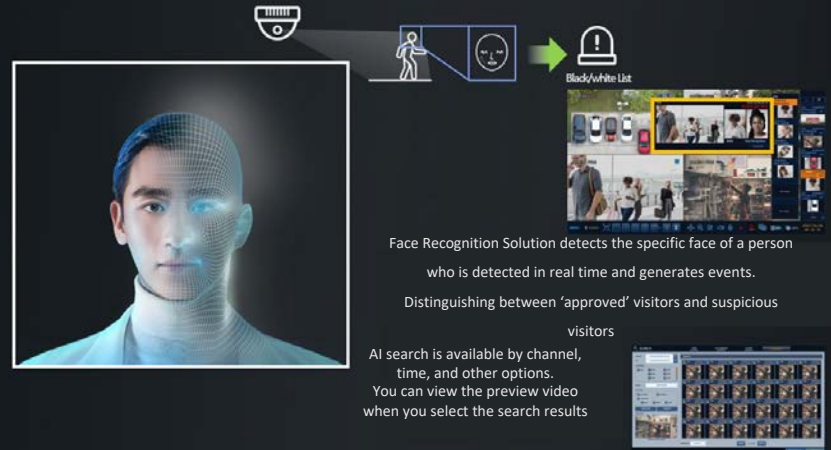


- **Group management**



Unapproved Approved Employee

Face Recognition



Other Options

- Active Privacy Masking (scrambled objects in target area provides to protect people's privacy)



The text 'Q & A' is overlaid on the left side of the image. The 'Q' is significantly larger than the '&' and 'A'. To the left of the 'Q' is a vertical white bar. The text is white and set against the grayscale background of the aerial photograph.

Ganz AI Box - Customization

(NRE based)

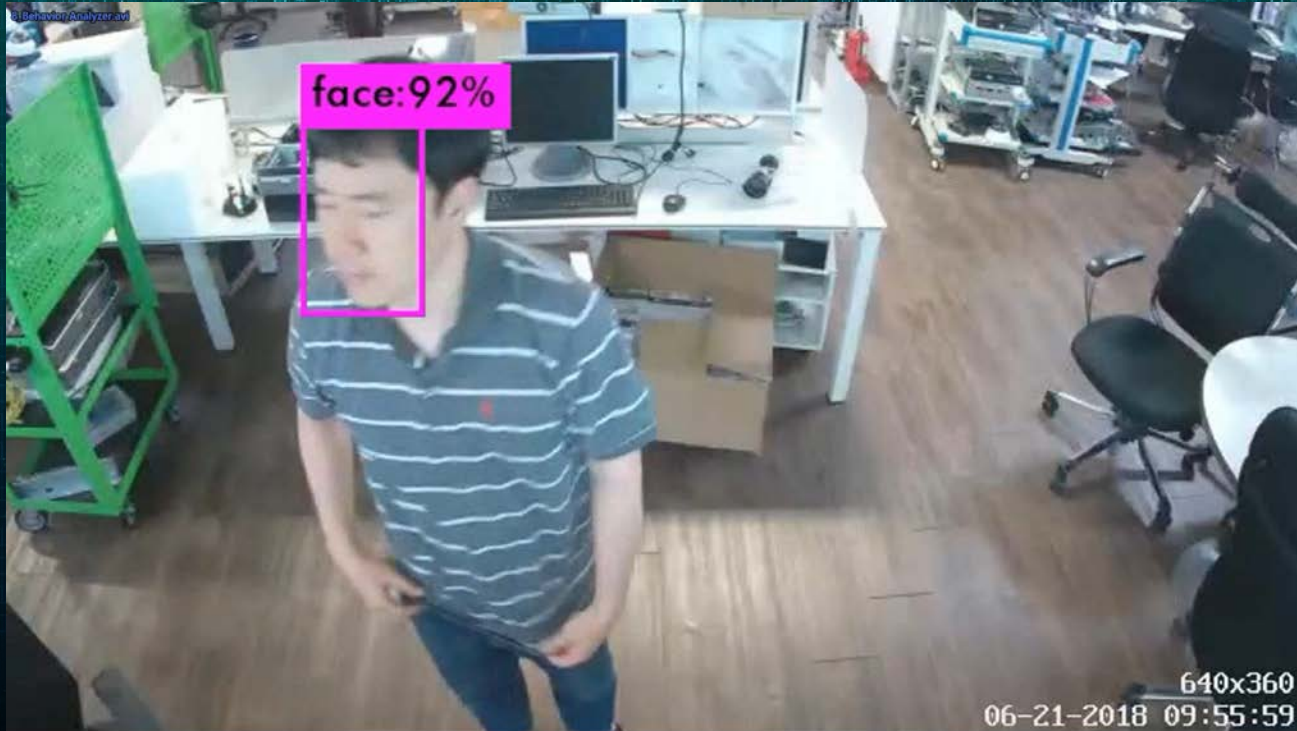


Helmet Recognition



Behavior Recognition (Optional)

Unmanned shop management application to recognize 'eating' & 'drinking'



Object Recognition (Optional)

Unmanned shop management system to recognize items

GANZ



| Q & A



Ganz AI Box – Features and Benefits



AI vs Traditional Analytics

AI Analytics

- Dynamic
- Answers the questions “why” and “how”
- Driven by data
- Input data + historical output [both used for training] → algorithm



Traditional Analytics

- Static
- Only answers the “what”
- Driven by hypothesis
- Input data + algorithm → output



Improved Operator Efficiency

AI BOX deep learning **only forwards 'true' alarms** to operators, enabling them to make better decisions in response to alarms – without the burden of excessive false alarms.

- Operators only receive 'true' alarms to review
- Reduce the likelihood of operator fatigue
- Improve staff efficiency by reducing alarm volumes
- Helps scale up sites with same number of staff

Respond faster to genuine security threats

With **90% fewer false alarms** being sent to the monitoring station, operators will have more time to focus on 'true' alarm verification and a **quicker response** to genuine threats.

- Reduce average response times
- Offer more competitive SLAs to customers
- Improve overall loss prevention standards

As an affordable and powerful alternative to traditional video analytics software, AI BOX helps in scaling your business - while improving operating margins.

Reduced alarm traffic could help streamline resources to take on additional sites.

- Scale business up and down on demand
- Grow without the need to hire additional staff
- AI BOX can be hosted on a "Central Verification Center" atmosphere

Growing Your Security Business Faster

Deliver a Better Customer Experience

Actionable events mean first response is always provided on genuine alarms **increasing client confidence** in the deployed solution.

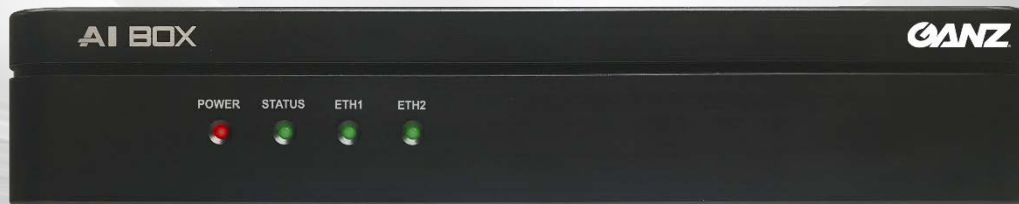
- AI BOX can be deployed on existing systems both IP and Analog
- Remotely optimize cameras to reduce false alarms
- Provide a higher value service for end-users

Ganz AI Box - Specifications



AI BOX

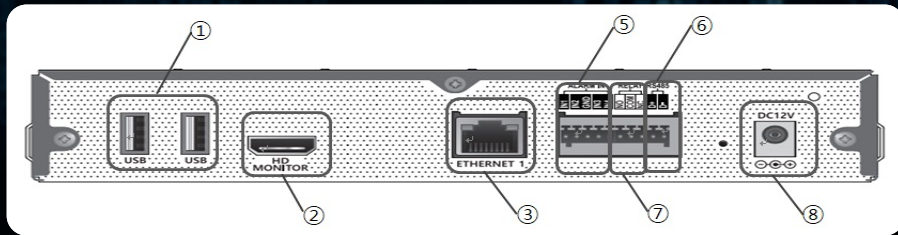
4 - 8 - 16 Channel



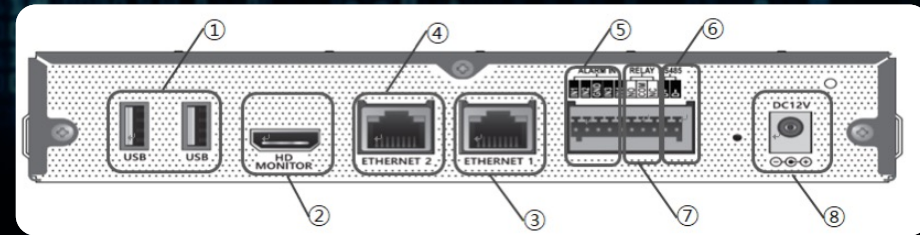
AI Box Specifications - 4Ch / 8Ch / 16Ch

- 1.USB:** Universal Serial Bus (USB) ports for additional devices such as USB Mouse.
- 2.HD Monitor:** For connecting a monitor to view connected cameras. Note, AI Box cannot be configured locally.
- 3.Ethernet T1:** RJ-45 port for connecting internet and other platforms such as interoperable VMS, recorders and IP cameras.
- 4.Ethernet T2:** Network port for connecting camera and other through a separate network disconnected from the outside.
- 5.Alarm In:** Alarm input signal line terminal.
- 6.Replay:** Replay connection terminal.
- 7.RS485:** Relay RS485 communication device connection terminal.
- 8.DC12V:** 12V adapter plug

4Ch AI Box



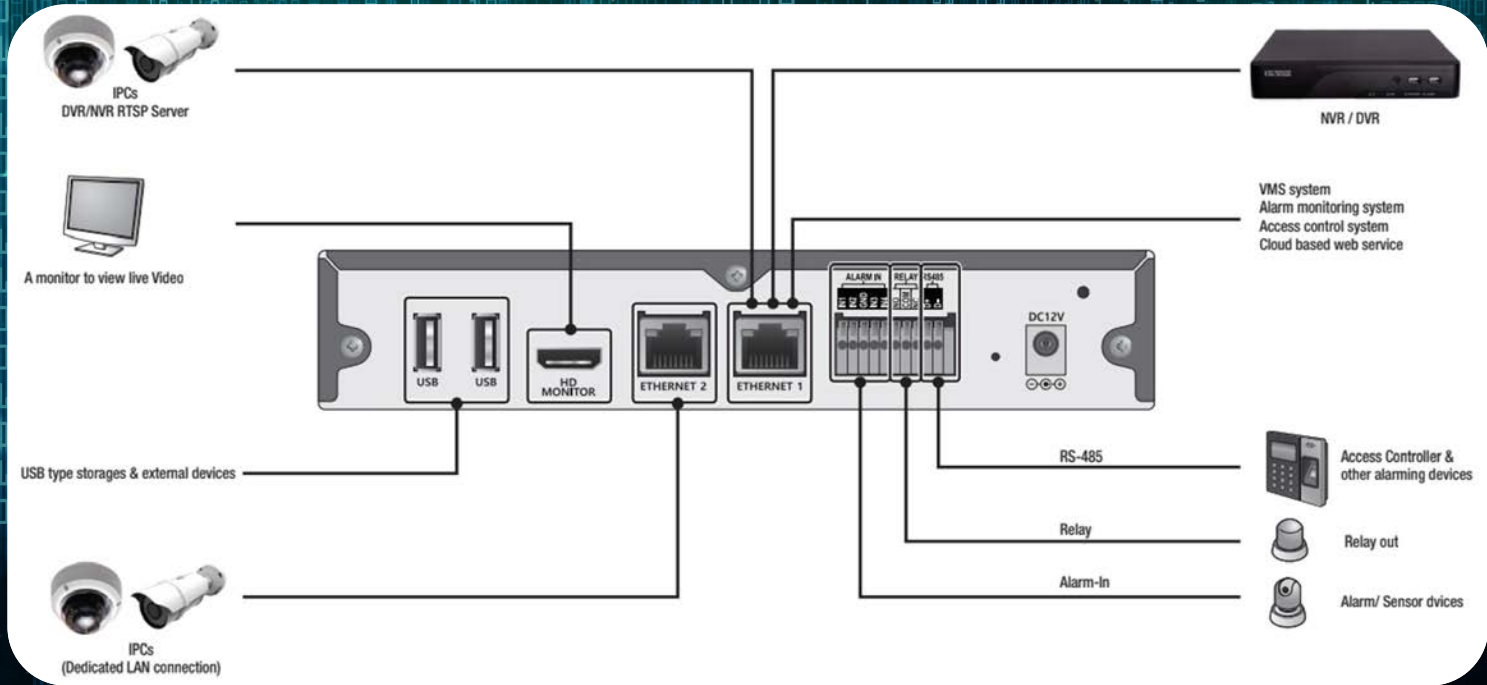
8Ch/16Ch AI Box



Basic Connection Configuration

AI Engine	Detector	Deep learning based, Object Detection & Classification - Human, Car, Bike and other objects		
	Tracker	Multi object Tracking		
	Recognizer	Face Recognition Engine (Option: License)		
		License Plate Recognition Engine (Option: License)		
	Behavior Analyzer	Human behavior analysis (Option: License / Customizing)		
Event Trigger	False Alarm Filter	Yes		
	False Alarm Filter	Intrusion, Presence, Loitering, Enter/Exit, Line Crossing, Stopping, Direction, Tailgating		
	Counting Trigger	Object Counting(Line, Zone, Queue(Presence)), Event Counting		
	System Trigger	Alarm-In, Recurrence		
	Recognition Trigger(Option)	Face Recognition, License Plate Recognition		
Event Action	Combined with other triggers	Yes (Customizing)		
	Network Action Handler	Onvif, HTTP, TCP, FTP, E-mail		
	System Action Handler	Relay Out, RS485		
Analytics Report	Pre/Post snapshot	Yes		
	Counter Report	Number of objects in zones, Line crossing counting (Line cross, Enter, Exit), Event counting		
	Visitor Analytics Report	Age, VIP (Need to enable face recognition): Option License		
	Queue Management Report	Queue length, Average Queue Time: Option License		
	Heatmap Report	Yes: Option License		
UI	Pathmap Report	Yes: Option License		
	Web UI	HTML5 Web UI (No Plugins)		
API	API	Onvif, REST		
VIDEO	INPUT VIDEO CHANNELS	Up to 4ch	Up to 8ch	Up to 16ch
	MAX VIDEO INPUT RESOLUTION	4K @ 30fps - (1080P @ 120fps)	4K @ 60fps - (1080P @ 240fps)	4K @ 120fps - (1080P @ 480fps)
	VIDEO INPUT METHOD	RTSP, Onvif		
	INPUT VIDEO FORMAT	H.265 / H.264		
	ANNOTATED VIDEO	4 + 1 (Channel0 encoding)	8 + 1 (Channel0 encoding)	16 + 1 (Channel0 encoding)
	VIDEO OUTPUT STREAM METHOD	RTSP over TCP, RTSP over Web Socket		
	MONITOR OUT	HDMI x 1		
	MONITOR RESOLUTION	Up to 1080p (For Diagnostic)		

Basic Connection Configuration



Q & A



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FOR INTELLIGENT REMOTE
VIDEO MONITORING

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