TraffiClair

DYMEC
AMERICAN INDUSTRIAL

ClairEye Product Presentation

ClairEye iSeries & VSeries

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Advantages of video detection



Traffic detectors include
- Loop
- Geomagnetic
- Radar
- Video
- Video-integrated Radar

	Advantage	Disadvantage
Loop	• Low cost • Accurate data • Strong anti-weather interference ability	• Pavement cutting • Short lifetime • Difficult & expensive for maintenance
Geomagnetic	• Accurate data • Wireless communication	• Pavement cutting • Difficult & expensive maintenance
Radar	• Detection zone defining • Accurate data • Multiple targets	• Not available for static target • Not able to identify size, color, shape, and scene • Expensive
Video		• Limited by environments such as bad weather or dark night
Video-integrated Radar	• Combine the advantages of both radar and video	• Expensive • Difficult to realize the real data integration

Advantages of video detection

- Machine learning & deep learning ensures the accuracy of the data
- Easy installation on any mast or existing roadside constructions with low cost.
- Rich real-time & statistic traffic data resources for management
- What you see is what you get.
- Available to identify vehicle size/color/plate number, and all kinds of road users such as pedestrian, bicycle
- Being able to detect scenarios such as fog, fire, accidents, traffic jam etc.
- Providing video surveillance for easy traffic management

ClairEye iSeries

Traffic AI Video Detector

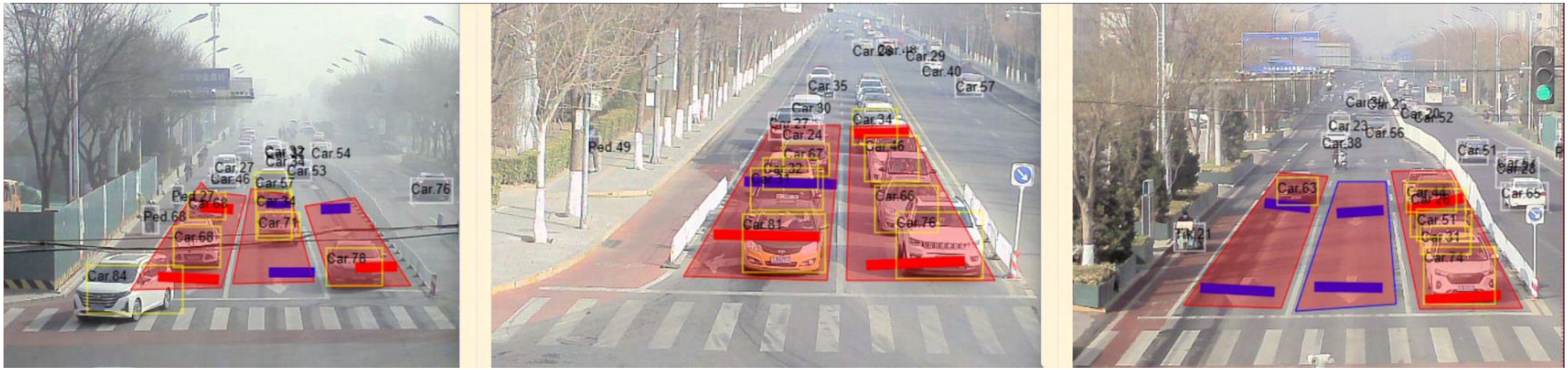




- AI & neural networks processing technology
- Cutting-edge vision with premium video quality
- 3 watts power consumption & compact size
- Ready-to-use solution for signal control optimization

AI & neural networks processing technology

Fusion of traditional machine learning and deep learning



- Targeted large-sample training is carried out for various weather conditions such as rain, snow, fog, for various environmental brightness such as day, dusk, evening and early morning, and for different density of vehicles on the road such as flat-peak hours, peak hours, etc.,
- AI training model is based on a huge quantity of real traffic data.
- Real-time traffic data output includes presence, traffic flow, occupancy and road user identification.
- Identification of 80 different targets including truck, car, motorbike, bicycle, pedestrian, and scenarios like fog, fire, accident, traffic jam etc.

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Cutting-edge vision with premium video quality

Sensor: 1080P, 1920*1080, 5 megapixel large scene coverage

0.0001Lux starlight CCD eliminates the need for infrared fill light

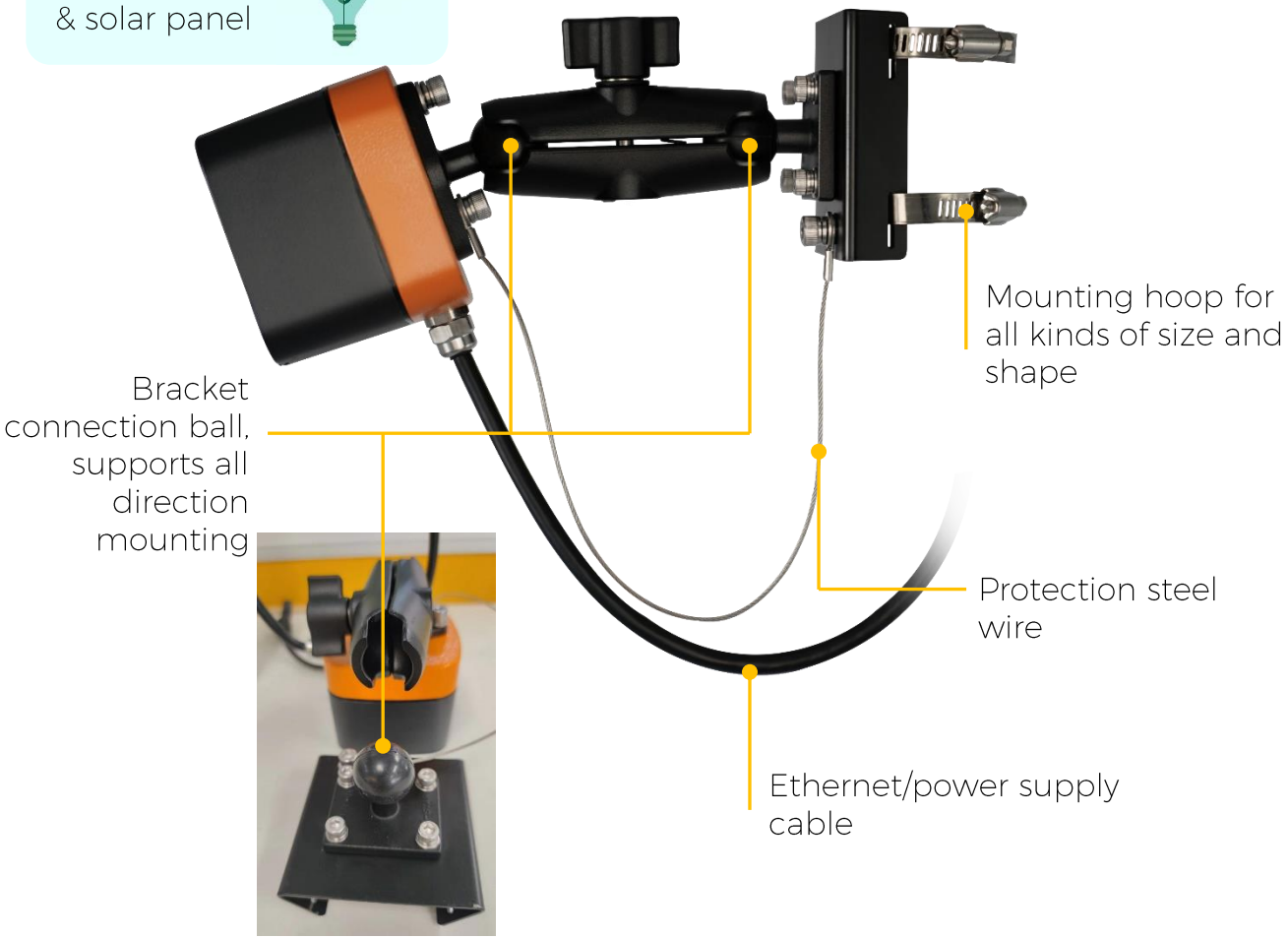
Digital WDR technology (120dB) avoids blurring from headlights at night

Industrial lens with 2.8-12mm focal length (fixed figure needs to be decided while place the order)



3 watts power consumption & compact size

3 Watts only supports POE & solar panel

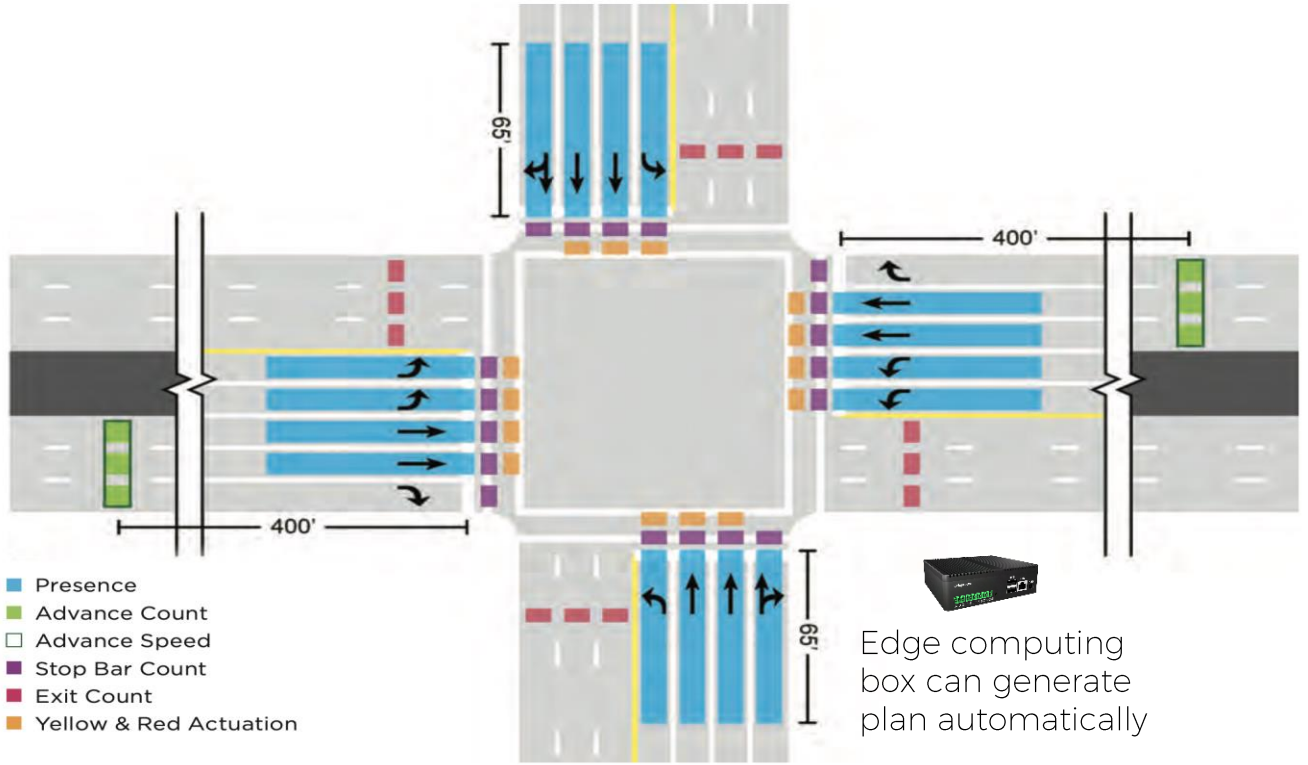


- Easy installation on all kinds of existing mast and roadside structures
- Rich communication methods for data collection and device management including Ethernet, IO, and optional Wi-Fi, 4G/5G, RS485
- Easy configuration web interface supports mobile devices. Support remote firmware upgrading with batch devices.
- Ultra-low power consumption less than 3 watts, supports POE, or solar panel for power supply
- Supports GB20999 (China standard), NTCIP protocol and user-defined protocol. Be compatible to any 3rd party signal controller or software platform.

Ready-to-use solution for signal control optimization

- Detection objectives:
  - Stop bar vehicle detection
  - Road user identification
  - Traffic event identification
  - Traffic data collection
  - HD video surveillance

- Traffic data output
  - Vehicle presence, traffic flow, occupancy (detect in & out), and road user identification
  - Identification of 80 different targets including truck, car, motorbike, bicycle, pedestrian
  - Event identification like fog, fire, illegal reversing on expressway, road congestion,
  - Vehicle abnormal driving event and accident detection

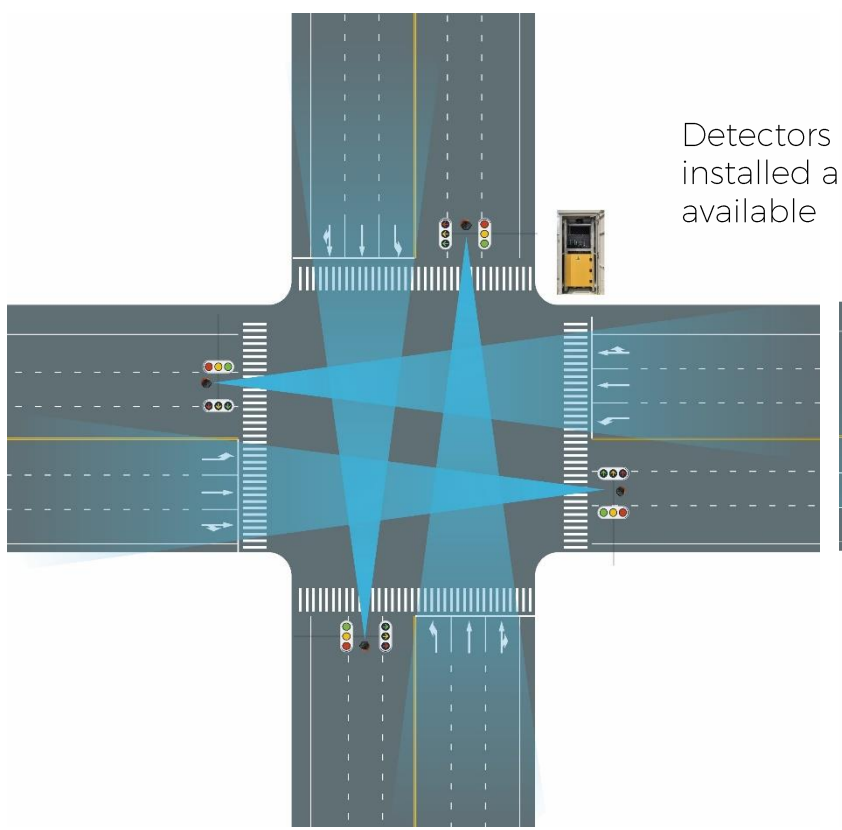


Edge computing box can generate plan automatically

- Under the help of edge computing box, signal control optimization plan can be generated for intelligent improvements.

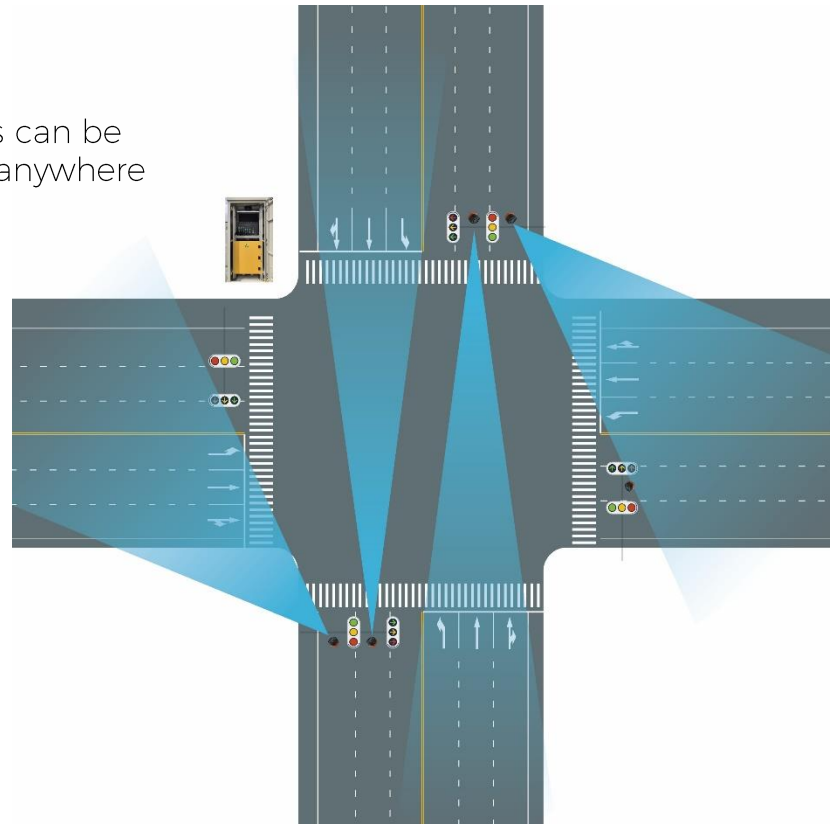
Application Scenarios

Vehicle presence, road user identification, traffic data collection

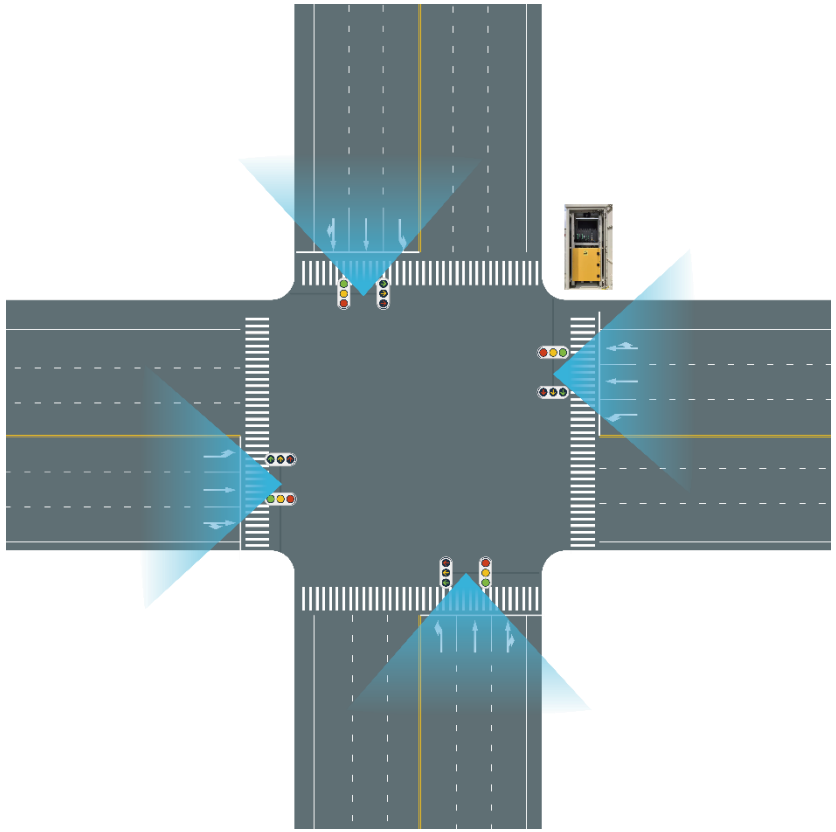


Detectors can be installed anywhere available

Far End Traffic Lights



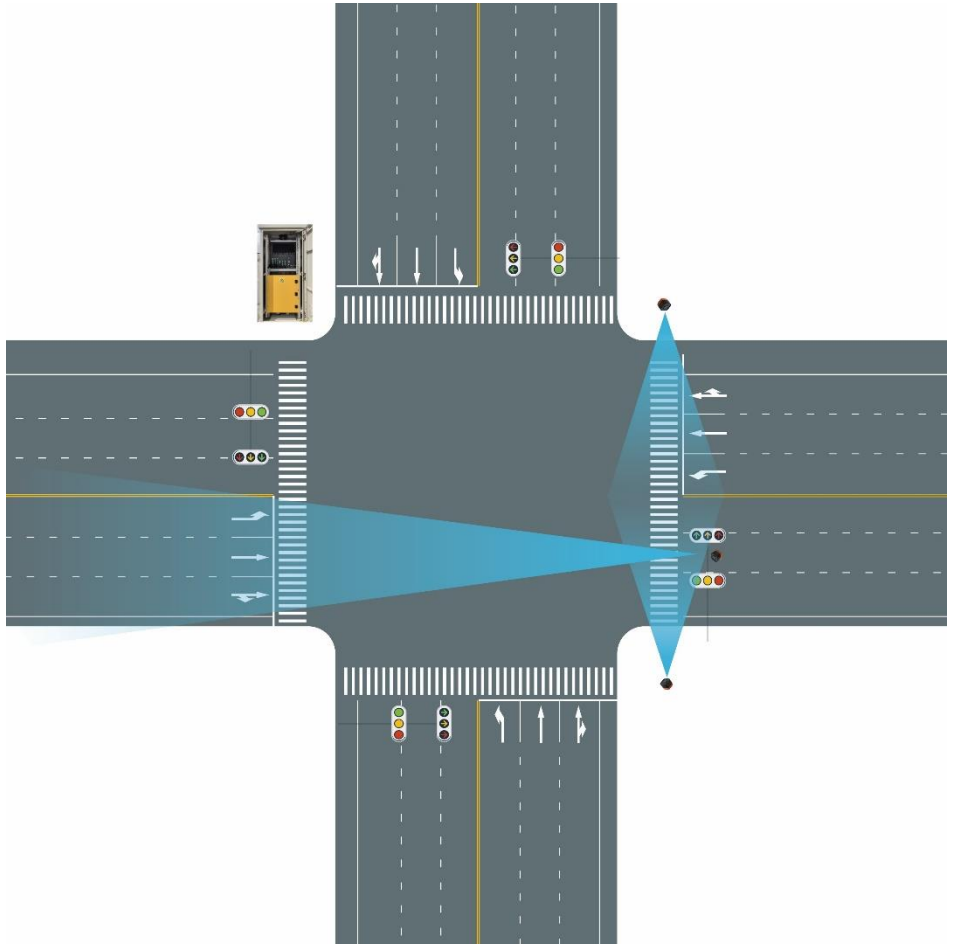
Far End Traffic Lights



Close End Traffic Lights

Application Scenarios

Adaptive control of pedestrian crossing



- The number of people in the waiting area,
- The comprehensive waiting time,
- The pedestrian walking speed in the crosswalk,

- The traffic flow demand of road vehicles and the coordinated control demand of upstream and downstream

- Optimal control of non-contact automatic pedestrian traffic signals.

Application Scenarios

Event detection



Detection of Pedestrian / non motor vehicle intrusion

Through the pedestrian / non motor vehicle detection model, the objects within the video ROI range are detected. Warn pedestrians or non motor vehicles in time.



Mass fog

Through the visibility model of expressway, the visibility of Expressway in the video is analyzed (divided into 6 levels), and if it is lower than level 3, it will be warned immediately.



Fire

Through the fireworks detection model, the fireworks in the video are identified and warned.



Detection of illegal reversing on Expressway

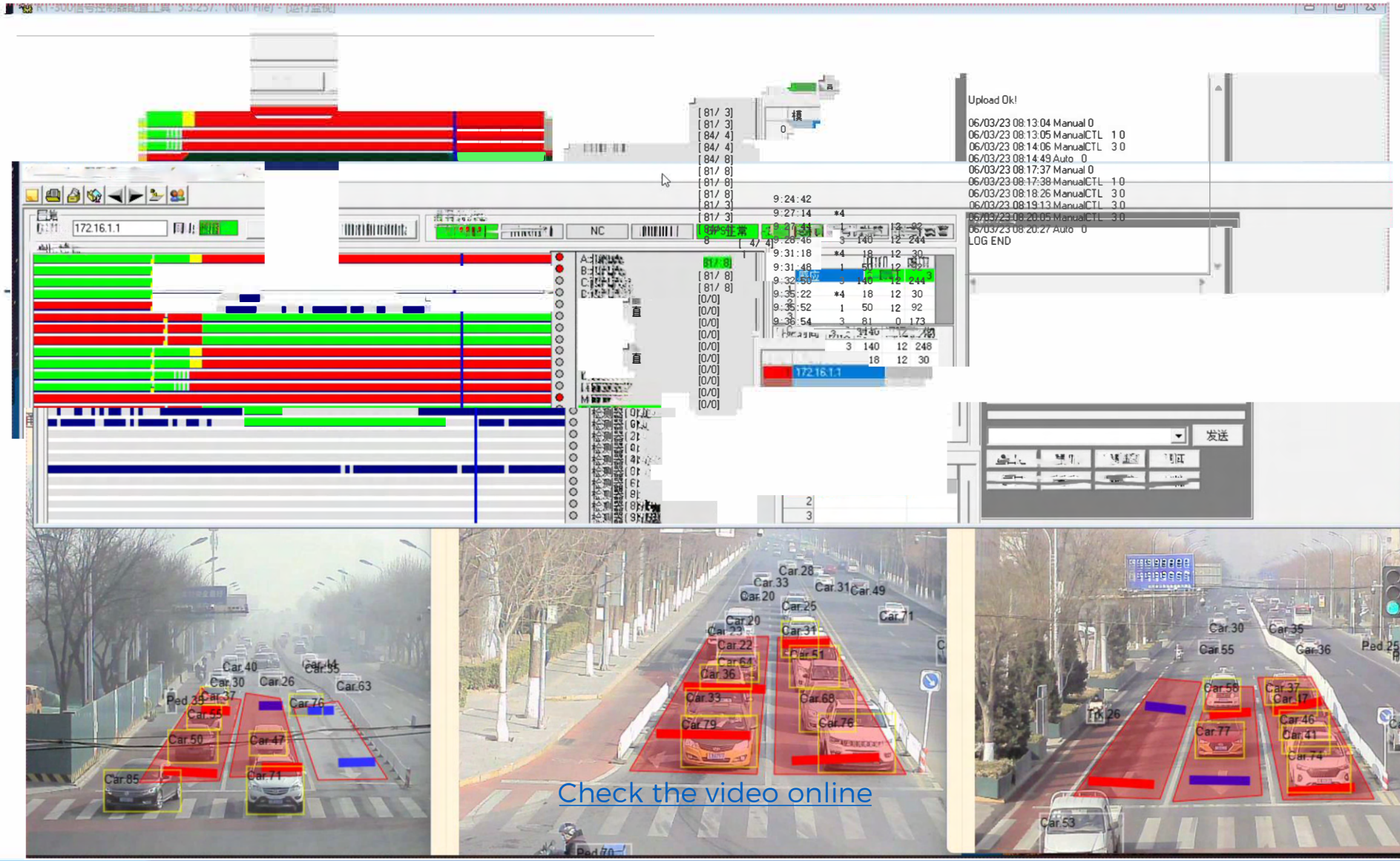


Road congestion event detection



Vehicle abnormal driving event detection

Case Video

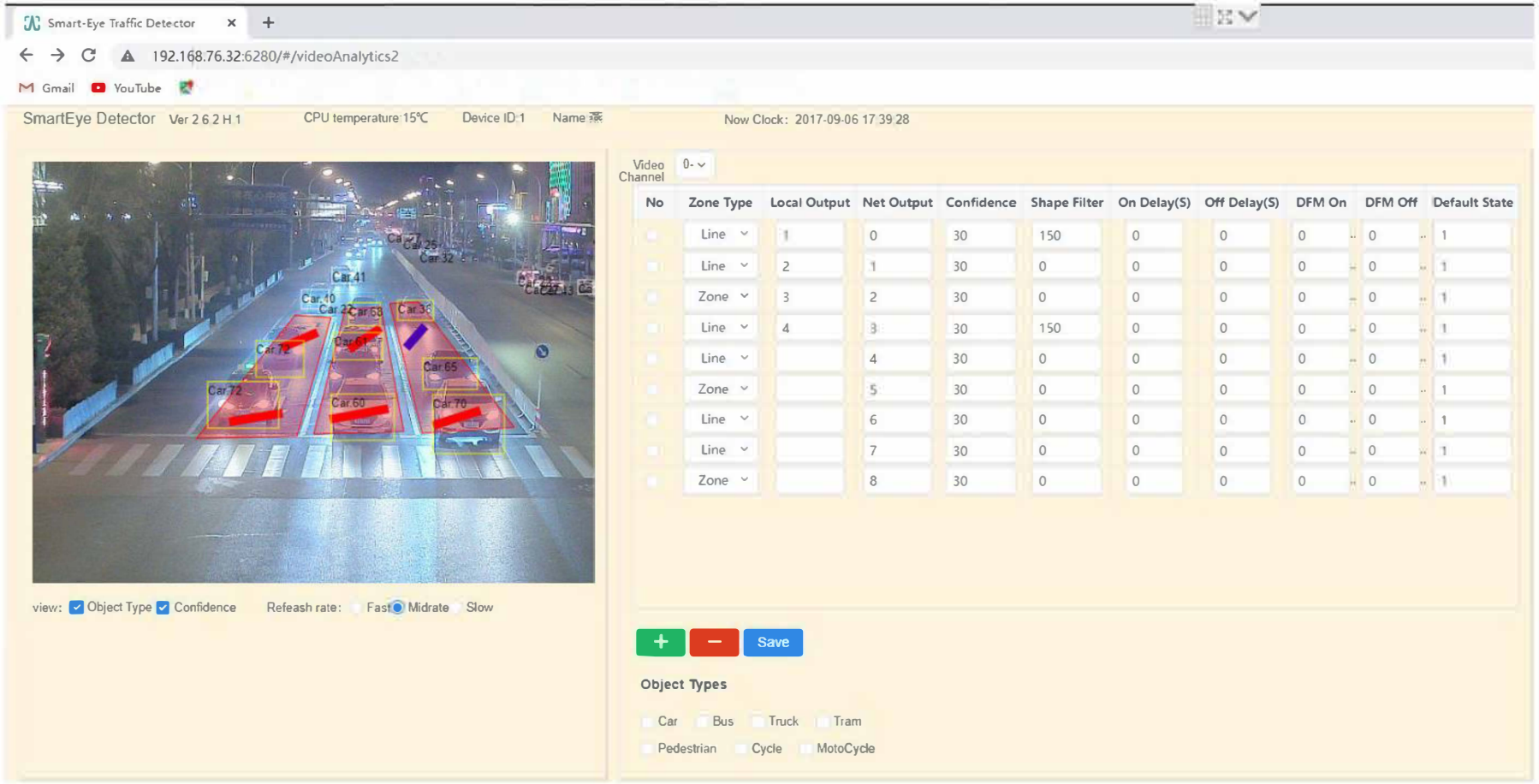


The cycle is dynamically adjusted according to the detection data

Easy detection zone & counting bar setting, and accurate stop bar presence detection

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Configuration



[Check the live demo video here]

Ordering Information

ClairEye-iFUN-LENS-COM-PS

i	FUN	LENS	COM	PS
i: iSeries	**PED**: Pedestrian detection **VEH**: Vehicle detection, default **EVE**: Event detection	**2.8**: Lens 2.8mm **4**: Lens 4mm **6**: Lens 6mm **8**: Lens 8mm **12**: Lens 12mm, default	**ETH**: Ethernet, default **EIO**: Ethernet and 2 I/O, for pedestrian crossing button **WIF**: Wi-Fi, conversion accessory is needed **4G**: 4G, conversion accessory is needed **5G**: 5G conversion accessory is needed	**12**: 12VDC power supply **24**: 24VDC power supply **POE**: POE power supply, default

Example:
ClairEye-iVEH-12-ETH-POE: iSeries for vehicle detection with 12mm lens and Ethernet port communication, POE power supply.

ClairEye VSeries

Traffic Video Detector

- Independent GPU chip for running more advanced algorithms
- Starlight-grade image sensor for excellent nighttime performance
- Rich detection data
  - Real-time Data: Traffic flow, real-time speed,vehicle type, queue length.
  - Statistical Data: Traffic flow, average speed, headway time, gap distance, time occupancy rate, space occupancy rate.
  - Accurate travel time analysis between multiple devices.
  - Analyzes traffic conditions such as slowmoving,congestion, and queued traffic.

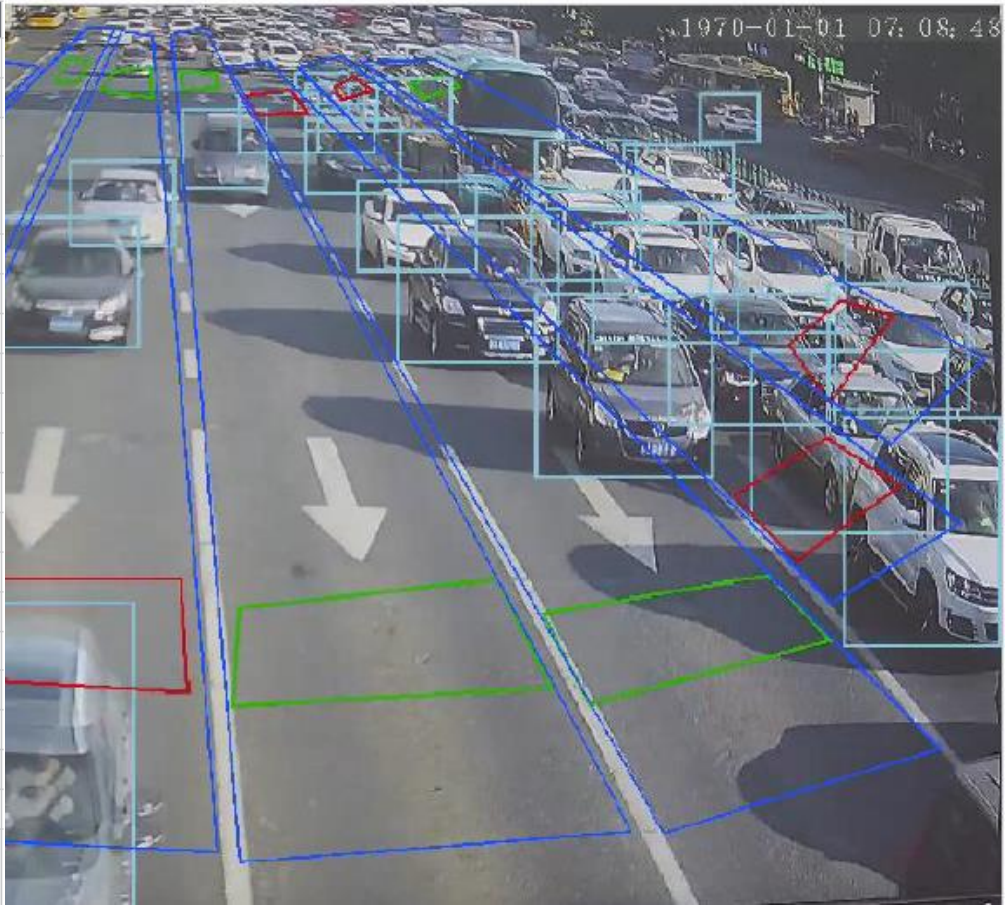


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ClairEye VSeries

Specs

Catagory		Features
Video	Video resolution (main stream)	5M (2560*1920)
	Encoding format	H.264, H.265
	Frame rate	25 frames (adjustable)
	Minimum illumination	Color 0.02Lux@F1.2 Black & White 0.01 Lux@F1.2
	Dual stream	Supports main and sub streams
	LENS	3.6-12mm (fixed lens, 12mm as default)
	Video Recording	Support OVNIF protocol for NVR recording
Processor	SOC processor	A7@600MHz
	GPU processor	1T computing power
Detection	Lanes	1-8 lanes
	Flash memory	128M (expandable)
	Real-time data	Speed, traffic flow, vehicle type, license plate etc.
	Statistics data	Speed, traffic flow, occupancy rate, headway, queue length
	Traffic status	Slow-moving, congested, queued
	Traffic flow detection accuracy	≥95%
	Vehicle type accuracy	≥95%
	Occupancy detection accuracy	≥95%
	Speed detection accuracy	≥92%
	Queue length accuracy	≥92%
	Non-motorized vehicle filtering rate	≥97%



iSeries vs. Vseries #1

	ClairEye iSeries	ClairEye VSeries
Architecture	AI & neural networks processing technology Deep learning + machine learning	SOC+GPU hardware cutting-edge traffic detection algorithms
Video Resolution	5M pixel, 1920*1080	5M pixel, 2560*1920
Frame Rate	10 as default	25 as default
Lanes	Up to 32 detection zones and 32 virtual detectors	1-8 lanes
Detection Data	• Vehicle presence, traffic flow, occupancy (detect in & out), and road user identification • Identification of 80 different targets including truck, car, motorbike, bicycle, pedestrian • Event identification like fog, fire, illegal reversing on expressway, road congestion, • Vehicle abnormal driving event and accident detection	• Real-time Data: Traffic flow, real-time speed, vehicle type, queue length. • Statistical Data: Traffic flow, average speed, headway time, gap distance, time occupancy rate, space occupancy rate. • Accurate travel time analysis between multiple devices. • Analyzes traffic conditions such as slow moving, congestion, and queued traffic.
Power Supply	POE, or 12-24VDC	110/220VAC





iSeries vs. Vseries #2

	ClairEye iSeries	ClairEye VSeries
Advantages	• Neural networking processing doesn't need high end processor save cost and also power consumption (only 3 watts) • The detection accuracy continuously improves with the increase in project implementation. • Gimble arm enables easy installation for any direction adjustment • Detection zone up to 32 lanes and 32 virtual detectors	• Rich detection data including real-time data, statistic data, especially vehicle speed and parameters related with space distance by calibrating the distance within the device • Higher resolution and 25 frame rate by default
Disadvantages	• 10 Frame rate by default • Lacking detection with speed and distance.	• Traditional SOC+GPU architecture requiring high end processor and higher power consumption • Detection zone up to 8 lanes • AC power supply, doesn't support POE
Suitable Cases	• Good choice for presence detection and work perfectly with ClairBox AI box for easy signal optimizations	• Good choices for cases requiring rich detection data especially speed and distance related data





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	ClairEye iSeries	ClairEye VSeries	FLIR Traficam AI	Yunex Sivicam (Siemens)	iteris Versicam	Autoscope IntelliSight
						
Function	Stop bar vehicle detection Road user identification Traffic event identification Traffic data collection HD video surveillance	Real-time Data: flow, real-time speed, vehicle type, queue length. Statistical Data Accurate travel time analysis Traffic conditions	Object detection: (motor)bike, small vehicles (car, van), big vehicles Vehicle Presence Detection Traffic Data Collection Queue Length Monitoring	CMOS camera combined with an image processing system	Accurate vehicle detection in all lighting conditions.	Object detection and motion tracking Cost-effective solution for traffic Bicycle and pedestrian detection Enhanced data in real-time
Detection Distance & Zone	150m Up to 32 detection zones and 32 virtual detectors	1-8 lanes	Wide 0-75m, narrow 75-150m 24 virtual loops for presence detection 8 traffic data zones for classification and counting	Wide 50m Up to 8 direction-sensitive detection zones	Designed for small or semi-actuated intersections.	Unknown
Video Characteristics	Sensor 1/1.8 inch, 5 megapixel(1920 x 1080) large scene coverage, Lens 2.8-12mm Frame rate 10-25FPs Encoding formats H.264, H.265	5M (2560*1920) 3.6-12mm (fixed lens, 12mm as default) Frame rate: 25 fps	Type: CMOS Type 1/2.8 color High Dynamic Range Resolution: Full HD (1920 x 1080) Frame Rate: 25 fps Compression: H.264, MPJEG Streaming Video: RTSP	Black & white, 1/3" CMOS, resolution 640 × 480 pixels	Color imager 768 x 494 effective pixels 530 TV Lines Automatic white balance >50dB S/N ratio 1.0 to 10,000 lux	Minimum Illumination: 0.007 to 0.009 lx Resolution: HD 720p Focal length: 2.9 - 9 mm
Communication	Ethernet, IO, and optional Wi-Fi, 4G/5G, RS485	Ethernet	POE, BPL, Wifi	Serial RS485 interface		10/100/1000 Wan and Ethernet ports USB 2.0 and 3.0
Power	PoE, 12-24VDC 3W	110/220AC 8W	24-42 VAC / 24-48 VDC Avg 9,5 W / Peak 14 W	12 to 26 V AC/DC ≤ 1.2 W	24 to 48VDC 11W typi-cal, 22W max	POE

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Questions & Answers

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Thank You!!!

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