

Dahua Smart **Transportation** Solution

- ENABLING A SAFER SOCIETY AND SMARTER LIVING -

WEU Solution Team
2026

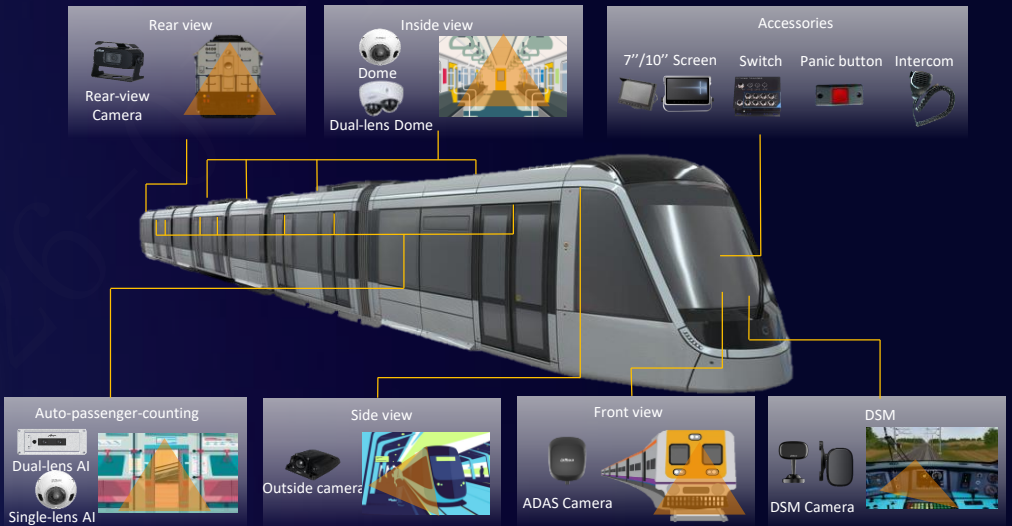
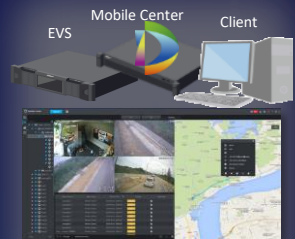
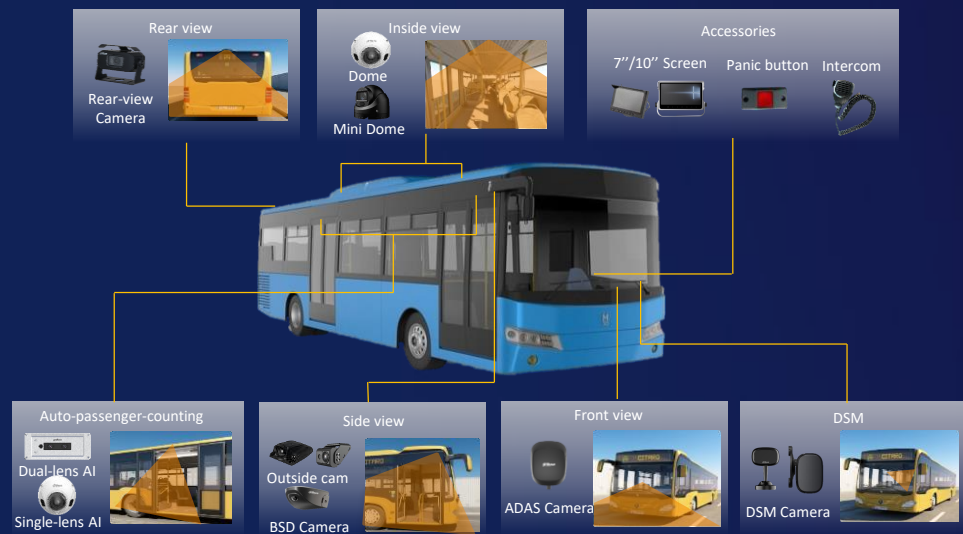
Smart Transportation Overview

Product Overview



Platform	 Mobile Center									
MXVR	 MXVR1004-I	 MXVR4104-I	 MXVR8212-I	MNVR	 MNVR4104-I	 MNVR4208-I	 MNVR8104-I	 MNVR8208-I	 MNVR8212-I	
Active Safety	 DSM Camera	 A-pillar DSM	 ADAS Camera	 BSD Camera	All-in-one	 ADAS Dashcam	 5-channel	 6-channel	 2-channel	 DSM Dashcam
HDCVI Camera	 ...	 ...	 ...	 ...	IPC Camera	 ...	 ...	 ...	 ...	 ...
Accessories	 7" Screen	 10" Screen	 Intercom	 AI Alarm Screen	 Alarm button	 Keyboard	 Backup Box	 PoE Switch	 M12-D type Switch	 ...

Solution Overview



Highlight Bus & Railway Related Products



Railway-grade CCTV



APC (ITxPT/Object Detection)



360° View Solution



R151+R158+R159 BSD Solution



AI IPC Cam (Congestion etc.)



10.1" LCD Screen



AI ANPR IPC CAM 6/8/12/16mm

Highlight Truck Related Products



CCTV



360° View Solution



R151+R158+R159 BSD Solution



DSM + ADAS



AI Dashcam (DSM + ADAS)



New Dashcams



Electric Mirror

New Solutions in 2026

High-standard CCTV solution (Bus & Railway)

1. All connectors are standard M12-D 4PIN type.
2. Close-loop railway-level CCTV solution.
3. Complete certifications, CE, EMC, REACH, RoHS, R118, IK67, IK10, EN50155:2021, EN45545-2.



BSIS + MOIS AI system (Middle/large buses, Truck)

1. Intelligent right & front side BSD solution.
2. Comply the EU R151 & R159 regulations.
3. CE, EMC, R118, IK67, IK10, EN50155:2021, EN45545-2.



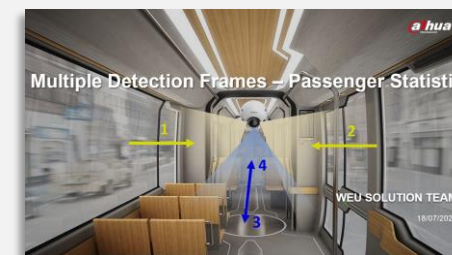
Auto passenger counter (Bus & Railway)

1. Associated membership of ITxPT Group.
2. Obtained ITxPT label.
3. Support DAHUA SDK, IBIS, ITxPT related protocols.
4. Adult, kid, bike, wheelchair, baby-stroller detection
5. CE, EMC, R118, IK67, IK08, EN50155:2021, EN45545-2.



IP Camera - Multi areas Passenger Detection (Bus & Railway)

1. One IP camera built-in AI which support draw maximum four detected frames to realize passenger statistics.
2. Save sorts of costs (purchase, store, install)
3. Standard SDK integration.



360° Surround view camera system (Bus & Truck)

1. 4 - 6 cameras for solution combination.
2. Compact size, easy installation.
3. Real time AI detection, image stitching etc..



New AI IPC Camera – ANPR & Mini Dome (Bus & Truck)

1. AI ANPR camera which support 6/8/12/16mm. It also allow to develop other AI algorithm or integrate third-party algorithms.
2. Mini Dome IPC camera designed for bus, truck or railway, more smaller for easier installation.



Railway Level CCTV Solution

Railway CCTV System



MDVR, CPC5241, MBW4231, EB5541, HDBW5541

Close-loop CCTV Solution

Bus/Coach/Metro/Tram/Train/Truck...



- MNVR8208 (8*IPC + 2*AHD), MXVR8212 (4*IPC+8*AHD), built in AI.
- Contained inside view cam, outside view cam & rear view cam.
- Some of cameras are built-in AI which allow to develop AI functions, such as ANPR, carriage crowding, luggage prevention, and in-car fight scene detection.
- All devices are resort **M12-D type 4PIN** connector.
- **Railway-grade certification standards**, R118, EN50155 and EN45545-2 etc.



Auto-Passenger-Counter (APC)



Background



In the operation of public transportation, operators often face the need for **vehicle scheduling**, **route optimization**, and **daily revenue reconciliation**. These tasks are crucial for **reducing passenger wait times**, **maximizing bus utilization**, and **quickly verifying & summarizing revenue**. Proper auto passenger counter could help the bus operator solve those issues and improve management efficiency quickly.

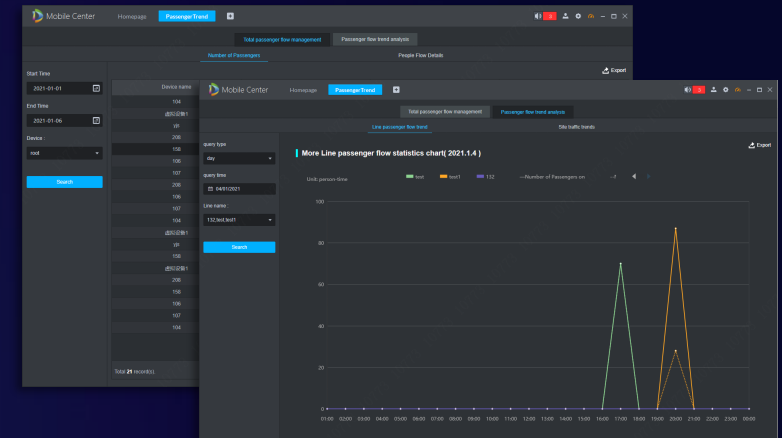
Dahua stereo vision passenger counting camera (**DH-IPC-HMW8441**) resort video and image metadata technology of deep learning algorithm to supports people statistics in multiple entrances and areas to further realize queue management & flow report analysis.



Waiting for too long time



Carriage is too crowded



Lack of fleet data visualization

Dahua Auto-Passenger-Counter Solution



DH-IPC-HMW8441XP-M12 Dual-lens APC

Bus/Coach/Metro/Tram/Train/Train Station/Boat

- $\geq 98\%$ accuracy (Support reach 99% accuracy after 1-2 weeks POC).
- Wide voltage range 9-36V, POE.
- Dual-lens, RJ45 or **M12-D type 4PIN** connector for option.
- Support **bi-direction installation** and the lens can be **tilted -10°** compared to the ground.
- Support multiple protocols, **Dahua SDK**, **IBIS-IP**, **ITxPT** and other customized protocols.
- Multiple working modes, **work standalone** or **work with MDVR**.
- Railway-level complete certifications.
- Assist bus operator to realize the **route scheduling**, **vehicle dispatching** and **full load rate detection** etc..
- Support adult/child/bike/baby stroller/wheelchair detection & classification function.



ECE R118

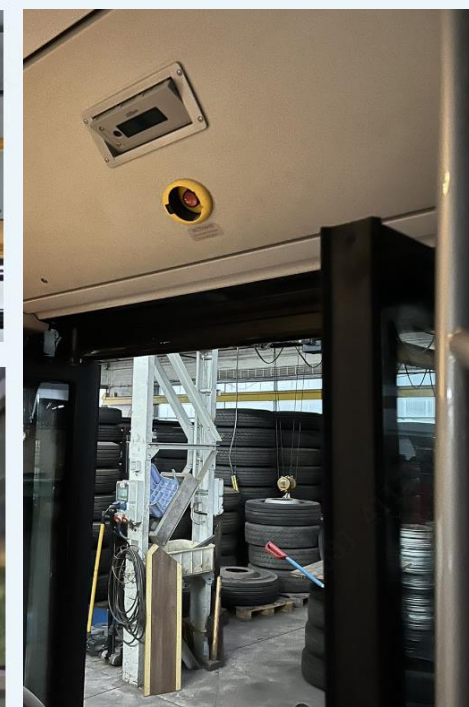
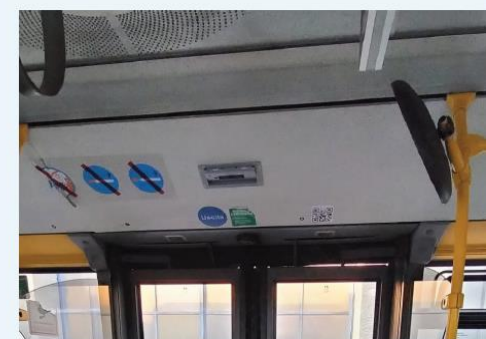
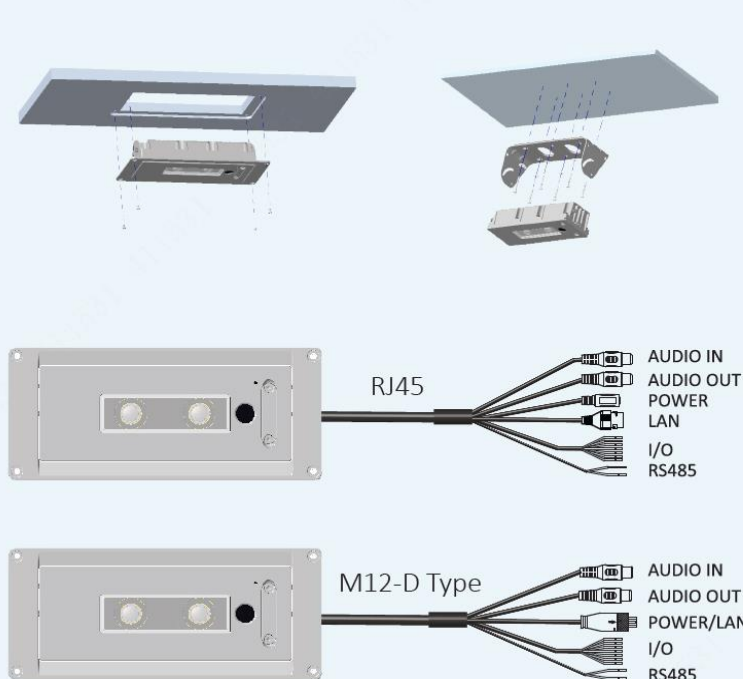
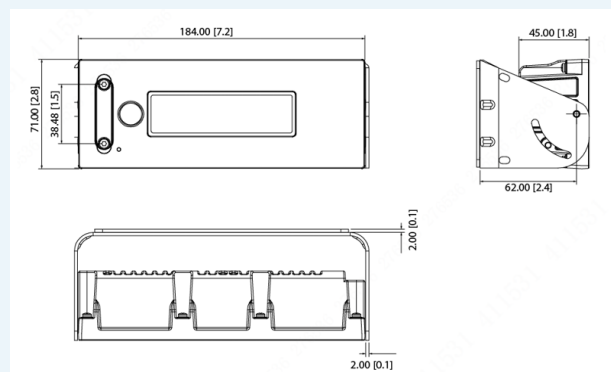


Illustration

Dahua APC is resort professional design: Embedded mounting & surface mounting are optional to meet different demands.

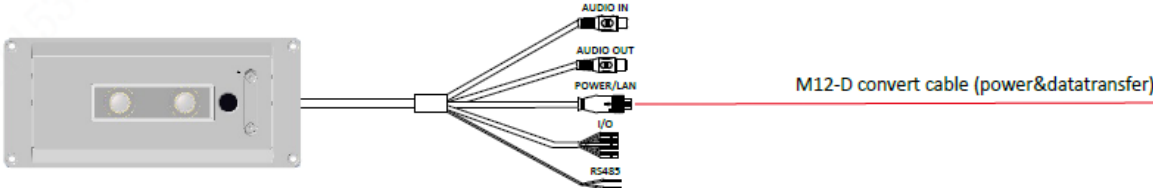
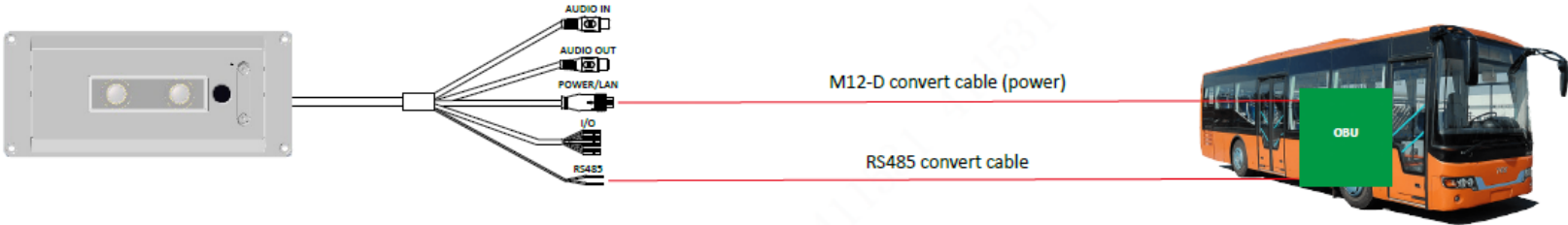
Installation height is 1.9-2.4m and installation width is 0.6-1.7m.

Applicable for sort of buses, Coach, tram, subway and train etc..



System Diagram with Third Party OBU

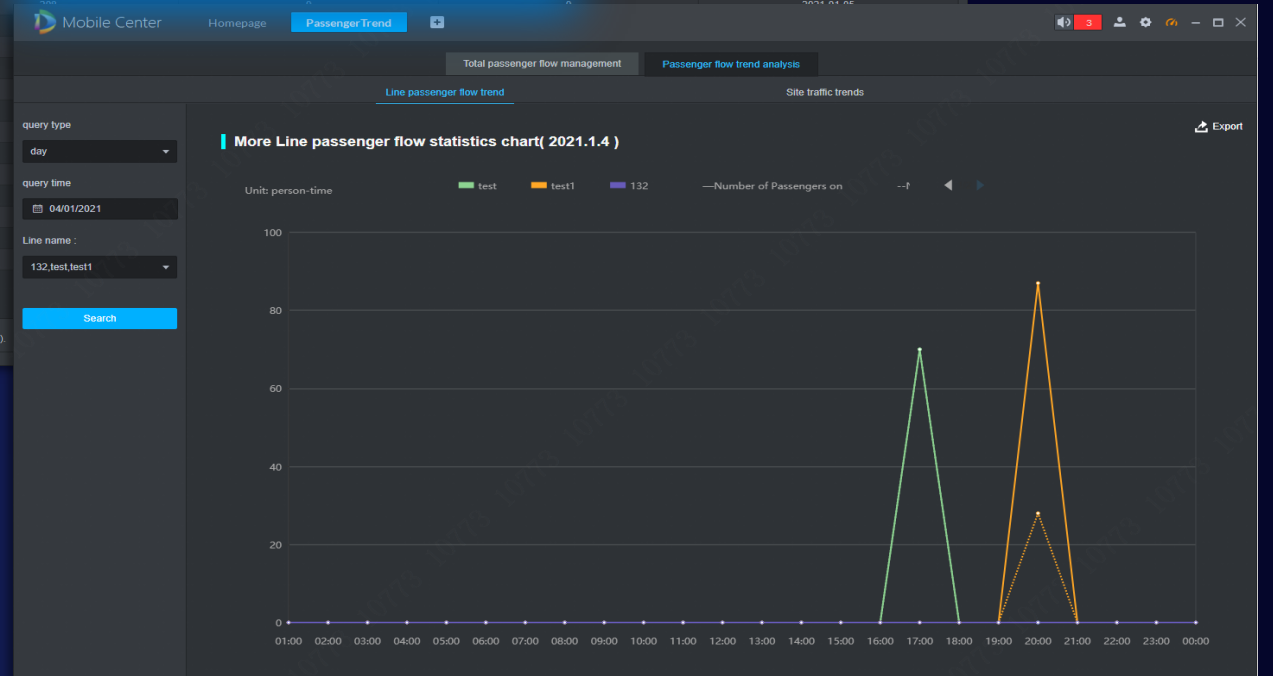
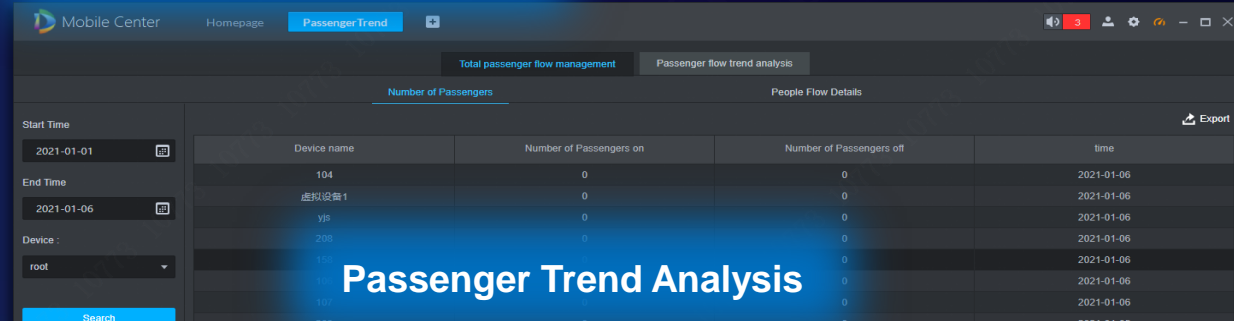


M12-D connector	Dahua Protocol	
	RS485 Protocol	

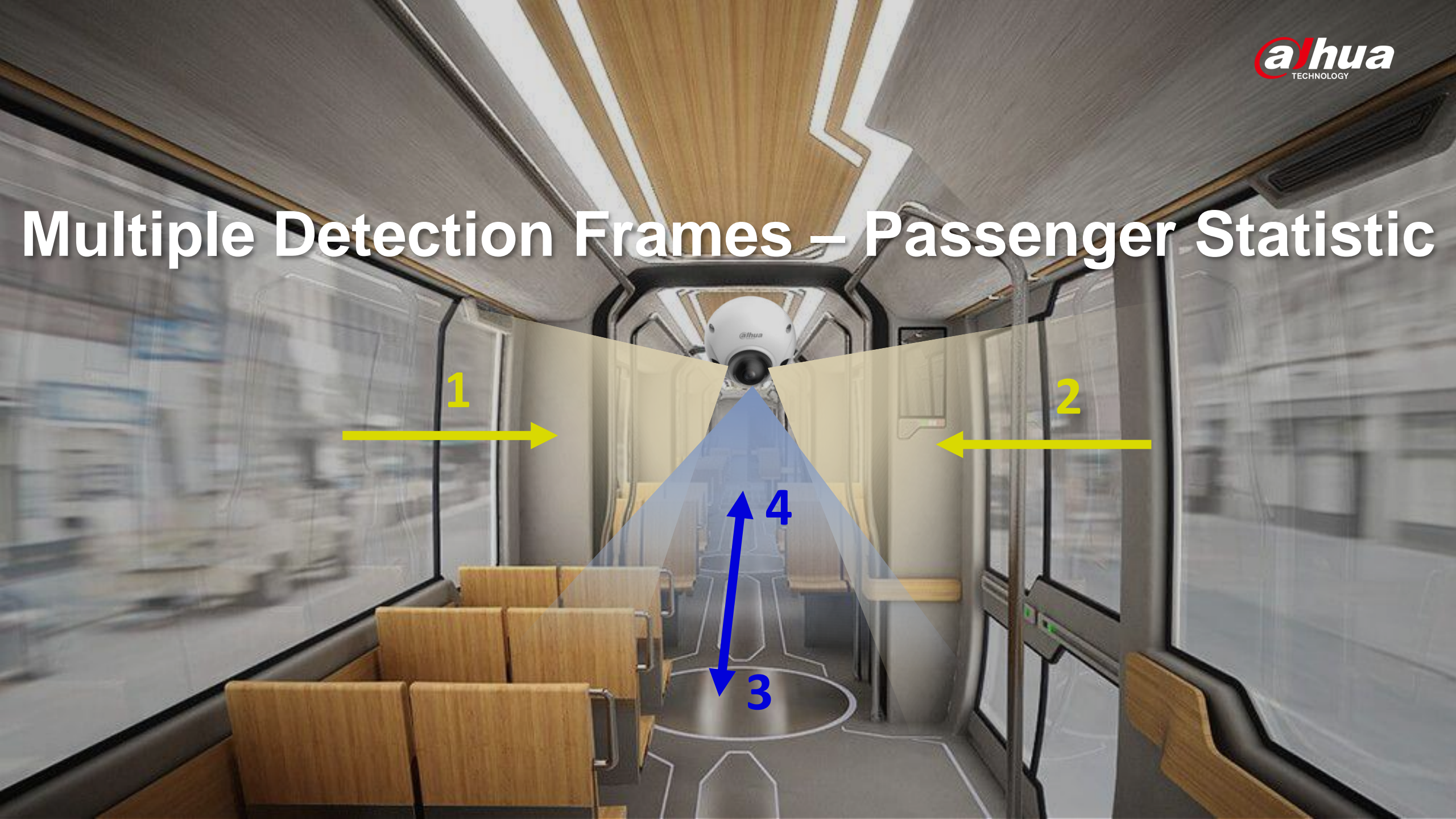
Based on customer’s requirements, Dahua also could provide customized protocol integration service between APC and third party devices.

Application Scenario

Passenger Flow Statistic



Multiple Detection Frames – Passenger Statistic



Vehicle's Passenger Statistic in EU

In order to enhance the efficiency of public transportation management and optimize fleet route scheduling & passenger experience in Europe, Auto-passenger-Counter (APC) are gradually become standard device in the bus and railway industries.

Currently, most APC products on the EU market **face the following series of challenges:**

One Camera Only for One Direction	High Requirements of the Calibration	High Price
1 : 1		

DAHUA New Passenger Counting Solution - 01



In June 2024, DAHUA Mobile product team is dedicated to creating a new passenger flow counting feature on the latest DH-IPC-CPC5241F camera, aiming to **achieve passenger flow data statistics in 3-4 different directions within one single camera**. This will help end users improve **installation efficiency** and **reduce costs**. Below is the schematic diagram.

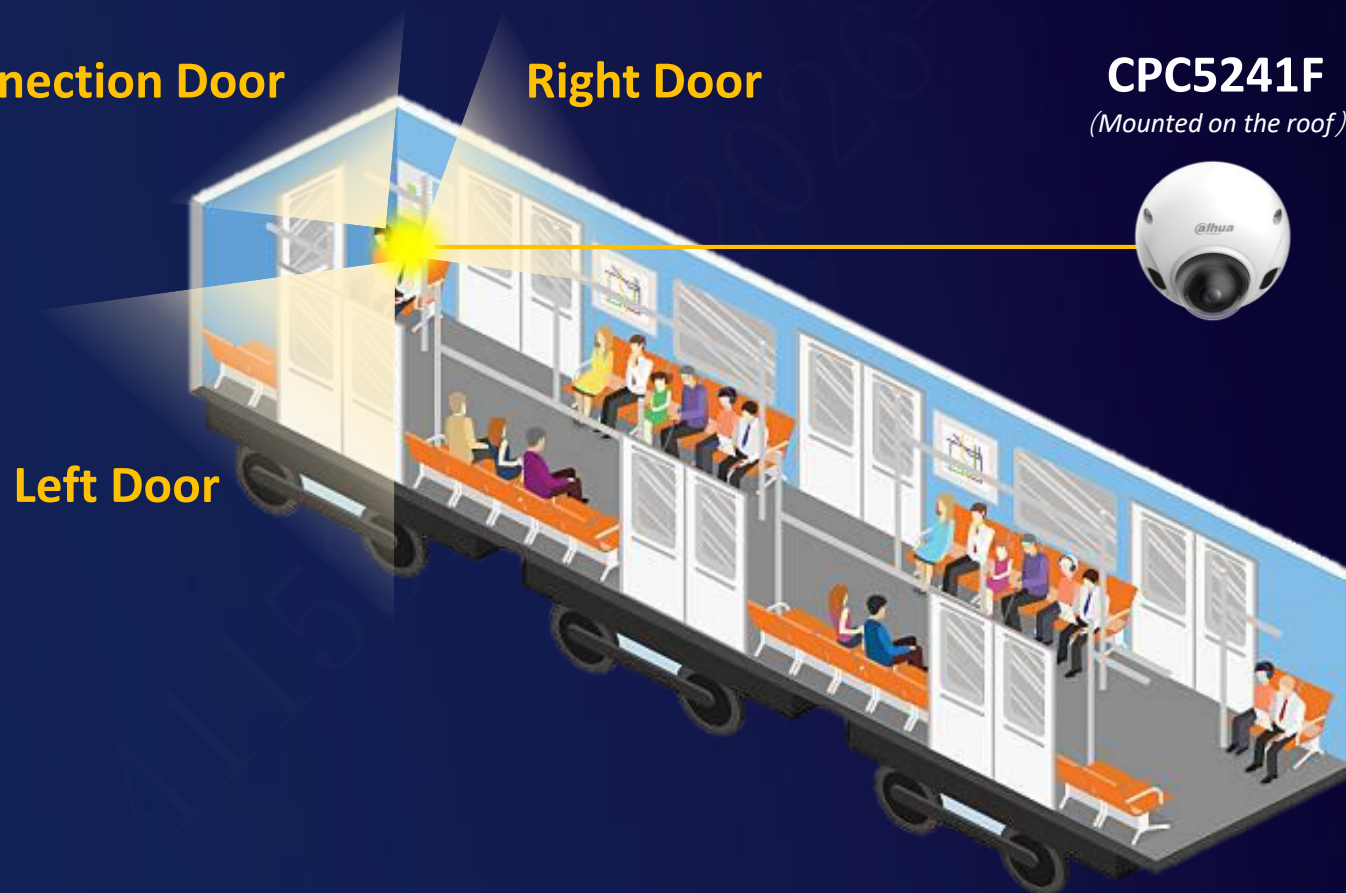
Carriage Connection Door

Right Door

CPC5241F

(Mounted on the roof)

Left Door



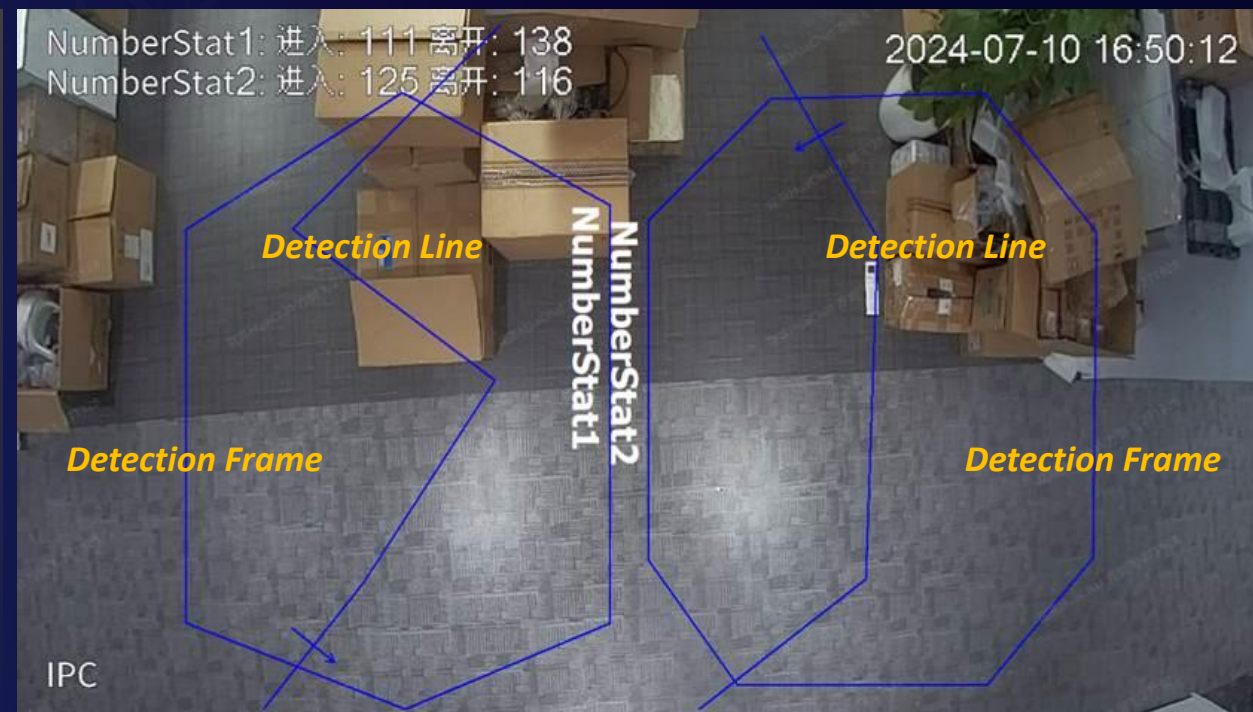
DAHUA New Passenger Counting Solution -02

The baseline of newest IPC camera **DH-IPC-CPC5241F** supports drawing multiple detection frames & lines to realize the passenger statistic in different directions on the tram, subway, train and large city-bus.

Below is the product highlights and the simulation tests in the office.

- The detecting frame can be **polygonal**, with **customizable shape** and **size**.
- The tripwire can be a **multi-segment polyline**.
- Different detection areas operate **independently** without interference.
- Up to **four detection frames** can be drawn.
- Around **95%** accuracy after the pilot tests.

Simulation Tests in the Office



DH-IPC-CPC5241F Camera



Following is the rendered diagram and key parameters of IPC camera CPC5241F.



Specifications	Contents
Image	2 MP, 1/2.7" CMOS, Outputs max. 2 MP (1920 × 1080) @25/30 fps
Illumination Distance	20m (65.62 ft)
Focal Length	2.1 mm/2.8 mm/3.6 mm/12 mm
WDR	120dB
Smart Codec	Smart H.265+/ Smart H.264+
AI	Built-in AI, support passenger counting/ANPR/Custom function
Connector	M12-D 4PIN connector or RJ45 connector
Dimensions	64.8 mm × Φ111.0 mm
Operating Temperature	−40°C to +60°C (−40°F to +140°F)
Certifications	CE/EMC/EMARK/EN50155:2021/EN45545-2/R118/IP67/IK10

R151 & R159 & R158 BSD Solution

R151 & R159 Regulations

The United Nations Economic Commission for Europe (UNECE) officially announced the technical regulations [UN R151](#) related to the **blind spot monitoring system (BSIS)** and the technical regulations [UN R159](#) related to the **moving off information system (MOIS)**.

The UN R151 regulation has come into effect on November 15, 2019. The UN R159 regulation has come into effect on June 10, 2021. The two regulations **will be mandatory for M2, M3, N2, N3 new models on July 6, 2022**, and **be enforced to for M2, M3, N2, N3 new registrations on July 7, 2024**. Considering the international influence of the UNECE regulation, it can be foreseen to increase More countries will adopt UN R151, UN R159 as the technical standard of their blind spot monitoring system and the moving off monitoring system.



Addendum 150 – UN Regulation No. 151

Date of entry into force as an annex to the 1958 Agreement: 15 November 2019

Uniform provisions concerning the approval of motor vehicles with regard to the Blind Spot Information System for the Detection of Bicycles

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2019/28.

Addendum 158 – UN Regulation No. 159

Date of entry into force as an annex to the 1958 Agreement: 10 June 2021

Uniform provisions concerning the approval of motor vehicles with regard to the Moving Off Information System for the Detection of Pedestrians and Cyclists

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2020/122.

BSIS Policy in Germany

The German Federal Ministry for Digital and Transport (BMDV) established the De-Minimis-Programm to subsidize fleets to encourage the installation of blind spot assist systems for heavy commercial vehicles weighing ≥ 7.5 tons.

<https://bmdv.bund.de/SharedDocs/DE/Artikel/StV/abbiegeassistent.html>

Das Bundesministerium für Digitales und Verkehr (BMDV) unterstützt auch in diesem Jahr den Einbau von Abbiegeassistenten. Es gibt weiterhin zwei Möglichkeiten, eine Förderung zu beantragen. Zum einen können seit dem 9. Januar 2023 Unternehmen des gewerblichen Güterkraftverkehrs im Rahmen des De-Minimis-Programms erneut eine Förderung für den Einbau von Abbiegeassistenten in schwere Nutzfahrzeuge ab 7,5 Tonnen beantragen. In 2024 können darüber hinaus wieder über das Förderprogramm „Abbiegeassistenzsysteme“ neue Anträge für Fahrzeuge mit einer zulässigen Gesamtmasse von mehr als 3,5 Tonnen und Busse mit mindestens neun Sitzplätzen gestellt werden. Ab 07. Juli 2024 ist die Ausstattung mit Abbiegeassistenzsystemen für neu zugelassene Fahrzeuge Pflicht, so dass die aktuelle FRL außer Kraft tritt (s. Nr. 12 der Förderrichtlinie für die Ausrüstung von Kraftfahrzeugen mit Abbiegeassistenzsystemen vom 29. März 2021). Über eine etwaige Verlängerung und Anpassung für die Förderung der Nachrüstung von Bestandsfahrzeugen mit Abbiegeassistenzsystemen wird rechtzeitig entschieden.

Wer kann eine Förderung beantragen?

Die Aus- und Nachrüstung von Kraftfahrzeugen mit Abbiegeassistenzsystemen steht auf zwei Säulen:

- Unternehmen des gewerblichen Güterkraftverkehrs können den Einbau von Abbiegeassistenten in schwere Nutzfahrzeuge ab 7,5 Tonnen seit 9. Januar 2023 wieder über das **De-Minimis-Programm** fördern lassen.

Alle anderen (bspw. Kommunen, Reisebus-Unternehmen, kommunale Unternehmen) können ihre Fahrzeuge mit einer zulässigen Gesamtmasse von mehr als 3,5 Tonnen und Kraftomnibusse ab neun Sitzplätzen über unser Förderprogramm „Abbiegeassistenzsysteme“ fördern lassen. Im Förderprogramm „Abbiegeassistenzsysteme“ sind für 2024 insgesamt 9,25 Millionen Euro vorgesehen.

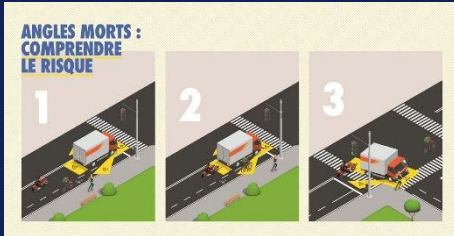


Wann sind Abbiegeassistenten bei...

Das Bundesministerium für Digitales und Verkehr (BMDV) hat sich bei der Europäischen Kommission und bei den anderen EU-Mitgliedstaaten stets für eine Ausrüstungspflicht mit Abbiegeassistenten eingesetzt und diese erreicht. Laut der EU-Verordnung 2019/2144 zur Typgenehmigung, die am 16. Dezember 2019 verkündet wurde, sind Abbiegeassistenten (dort: „Totwinkel-Assistent“) ab 6. Juli 2022 für neue Fahrzeugtypen und ab 7. Juli 2024 für neue Fahrzeuge verpflichtend. Zu diesem Zeitpunkt tritt deshalb die bestehende Förderrichtlinie vom 29. März 2021 außer Kraft. Über eine etwaige Verlängerung und Anpassung für die Förderung der Nachrüstung von Bestandsfahrzeugen mit Abbiegeassistenzsystemen wird rechtzeitig entschieden.

Es ist der Initiative des BMDV zu verdanken, dass Abbiegeassistenzsysteme anders als zunächst geplant zukünftig in allen neuen Kraftomnibussen und Lastkraftwagen mit mehr als 3,5 Tonnen zulässiger Gesamtmasse (Fahrzeuge der Klassen M2, M3, N2 und N3) verpflichtend vorgeschrieben sind.

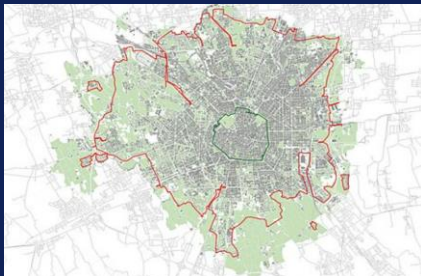
BSIS Related Policies in WEU



As of January 1st 2021, [all heavy vehicles in France](#) (both goods and passenger transport vehicles) must be fitted with a sign to inform others about their vehicle's blind spots. Failure to comply with this obligation may result in a 4th class fine which is usually 136 euros but in a worst-case scenario, it can be as much as 750 euros.



In 2020, 153 pedestrians, 134 motorcyclists, 21 bicycle users and 7 personal mobility vehicle users died on urban roads. [The Spanish General Directorate of Traffic \(DGT\)](#) is introducing blind spot signage for commercial vehicles. The aim is to reduce the number of accidents involving trucks and vulnerable road users, such as cyclists and motorcyclists. In parallel, They have also been working with UNO (Business Organization of Logistics and Transport) CITET (Innovation Centre for Logistics and Transport of Goods) and AECOC (Association of Manufacturers and Distributors) for the implementation of this signal and for others actions that will be carried out soon.



In the fall of 2023, [the Milan city government](#) has made it mandatory to install stickers on trucks entering Zone B to warn of the trucks' blind spot. The compulsory sensors will be required from December 2024 that alert drivers to the presence of cyclists or pedestrians in close proximity, particularly in blind spot scenarios where risks are heightened, such as on turns. Although before then truck drivers do have to demonstrate that an order has been placed for these.

Dahua Blind Spot Detection Solution



DHI-DAE-CBS8210 BSIS & MOIS Blind Spot Solution (N2/N3/M2/M3)

Bus/Coach/Truck/Tank truck/garbage truck/tram...

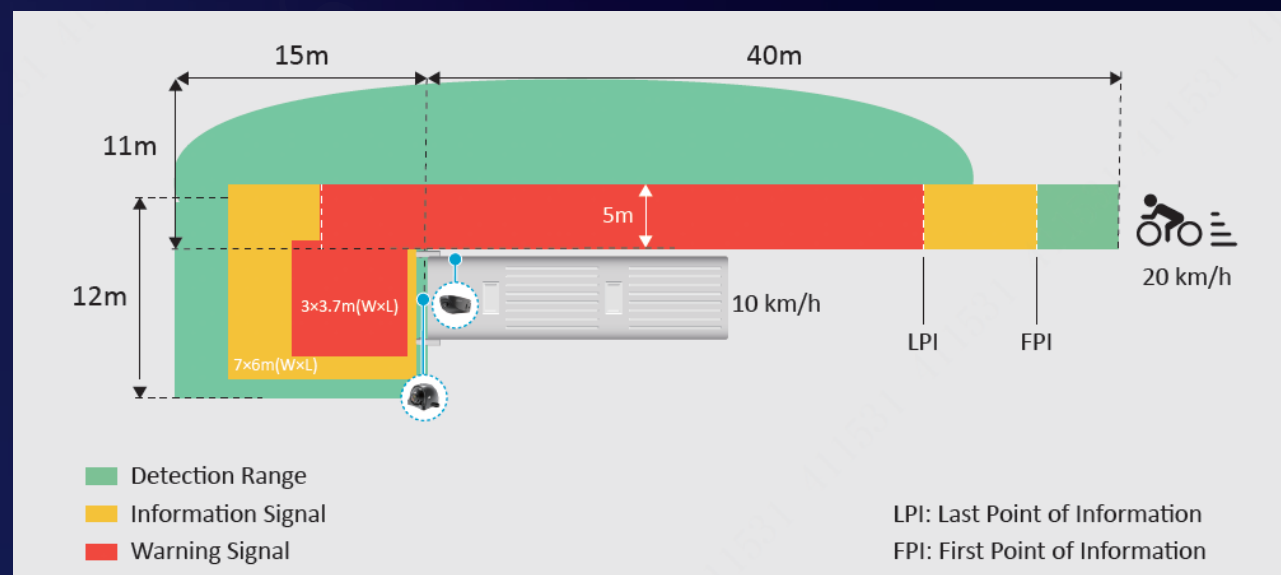
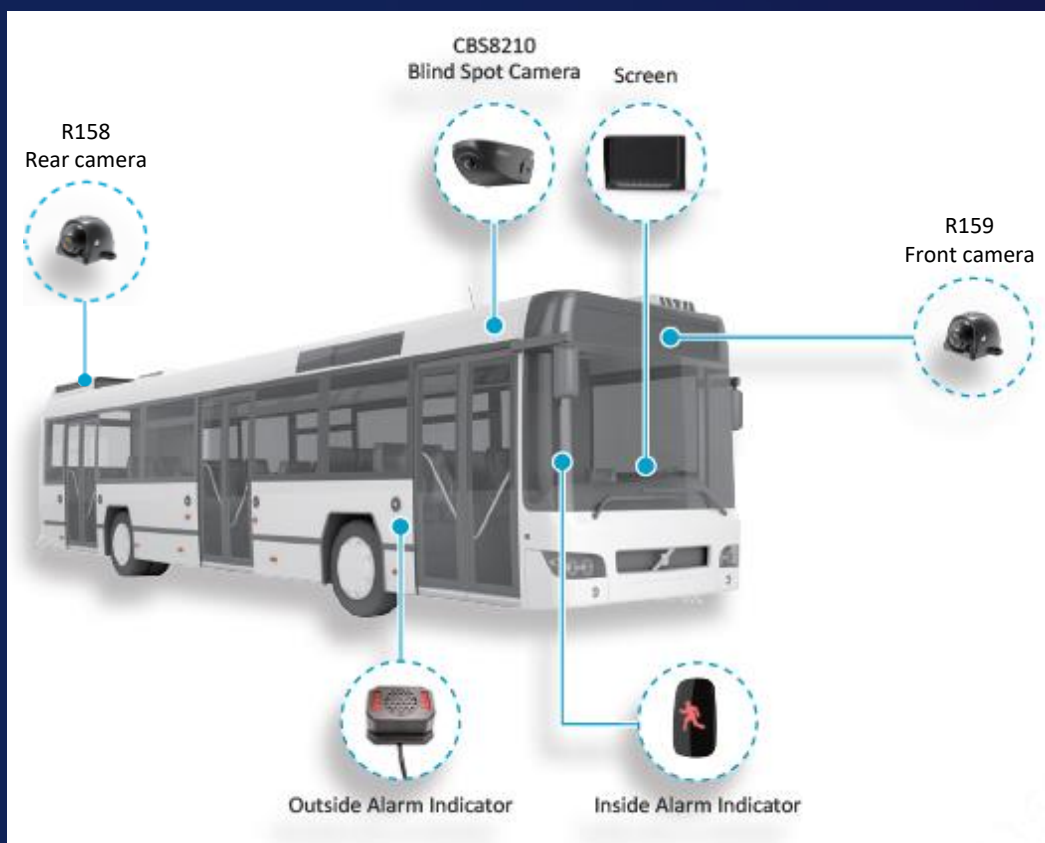
- $\geq 95\%$ accuracy.
- Wide voltage range 9-36V, POE.
- Dual-lens, maximum **detected range** could reach **55m (length) * 15m (width)**.
- Support to connect the R159 & R158 to realize the MOIS & REIS function.
- Support to connect 7" screen to display the live stream & send alarm notices for the driver.
- Multiple working modes, work standalone or work with MDVR.
- TUV issued formal report, complete certifications.
- ≥ 3.5 tones vehicle must [apply the warning sticker](#) to notice it exist blind spots in EU countries
- In [a naturalistic driving study](#) 15 heavy goods vehicles and 5 buses were equipped with a BSD and data were collected over a period of two years. Up to **200 lives annually could potentially be saved** with the analysed system, on the assumption that the collision warnings correlate directly with crashes.



Illustration

Dahua CBS8210 is a smart IP camera with built-in top and rear view lenses for detecting pedestrians, cyclists and motorcyclists in the side blind spots of large vehicles and warning the driver to act with caution.

It could connect the inside & outside alarm indicators and 7" screen to prompt the dangerous alarms in real time. Meantime, it can also meet the requirements of EU Regulation No.151.



System Diagram

Diagram 1: R151&R159 System Work with MNVR/MXVR

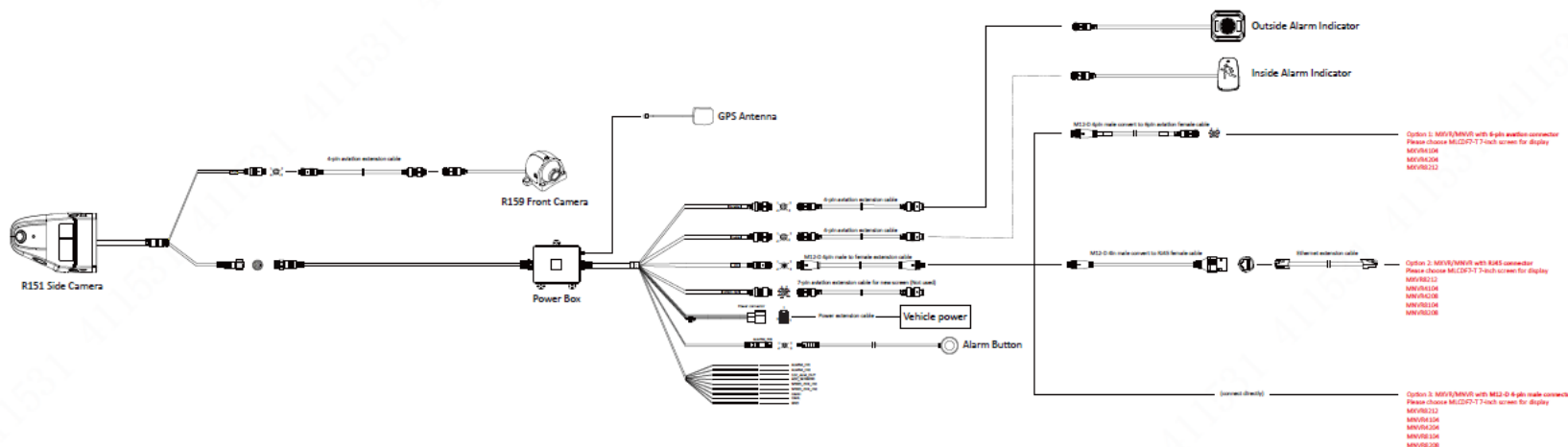
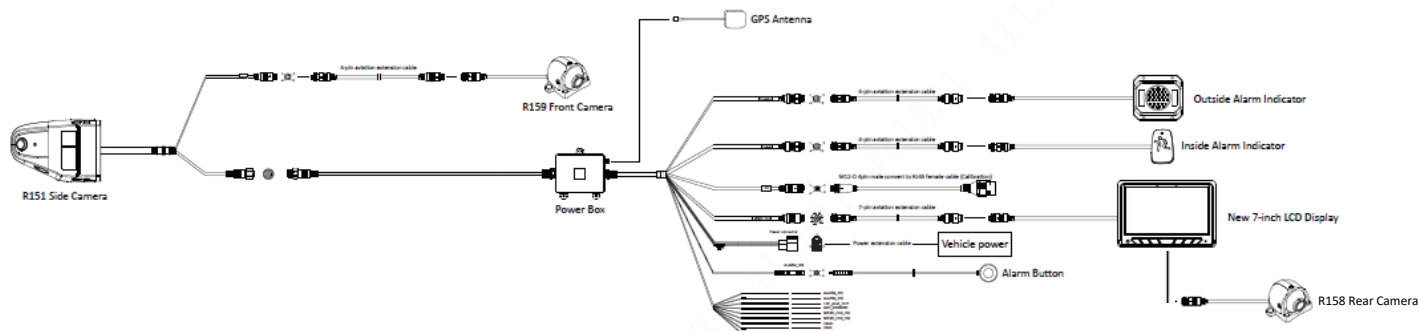


Diagram 2: R151&R159 System Work Standalone



Applicable Vehicle Types

Dahua BSD solution applicable for the N2, N3, M2, M3 type of vehicles as below.



Logistic Truck



Tank Truck



Garbage Truck



VANS



Coach



City Bus



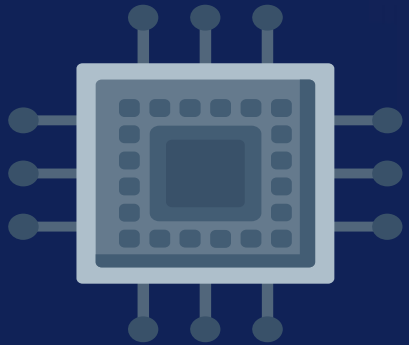
Tram



Train

Benefits

AI assist to reduce risks



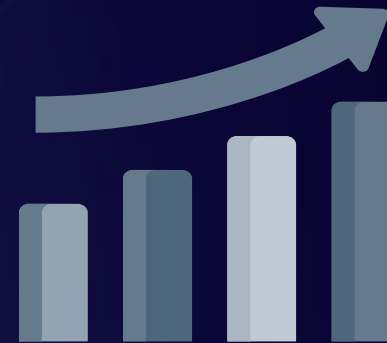
Safer driving environment



Efficient fleet management



Better transport safety performance



Lower accident-related costs



Prediction & Precaution

Detecting and warning dangerous to reduce accidents



Real-time Local Alarms

Inside and outside notifications for driver and pedestrians respectively



Target Recognition & Distraction Filtering

Accurate and reliable risk identifications with AI power



Dual-lens Combination

Wide range detected area guarantee road safety



Easy Installation with Flexible Angle

Streamlined structure allow to save operation costs and time

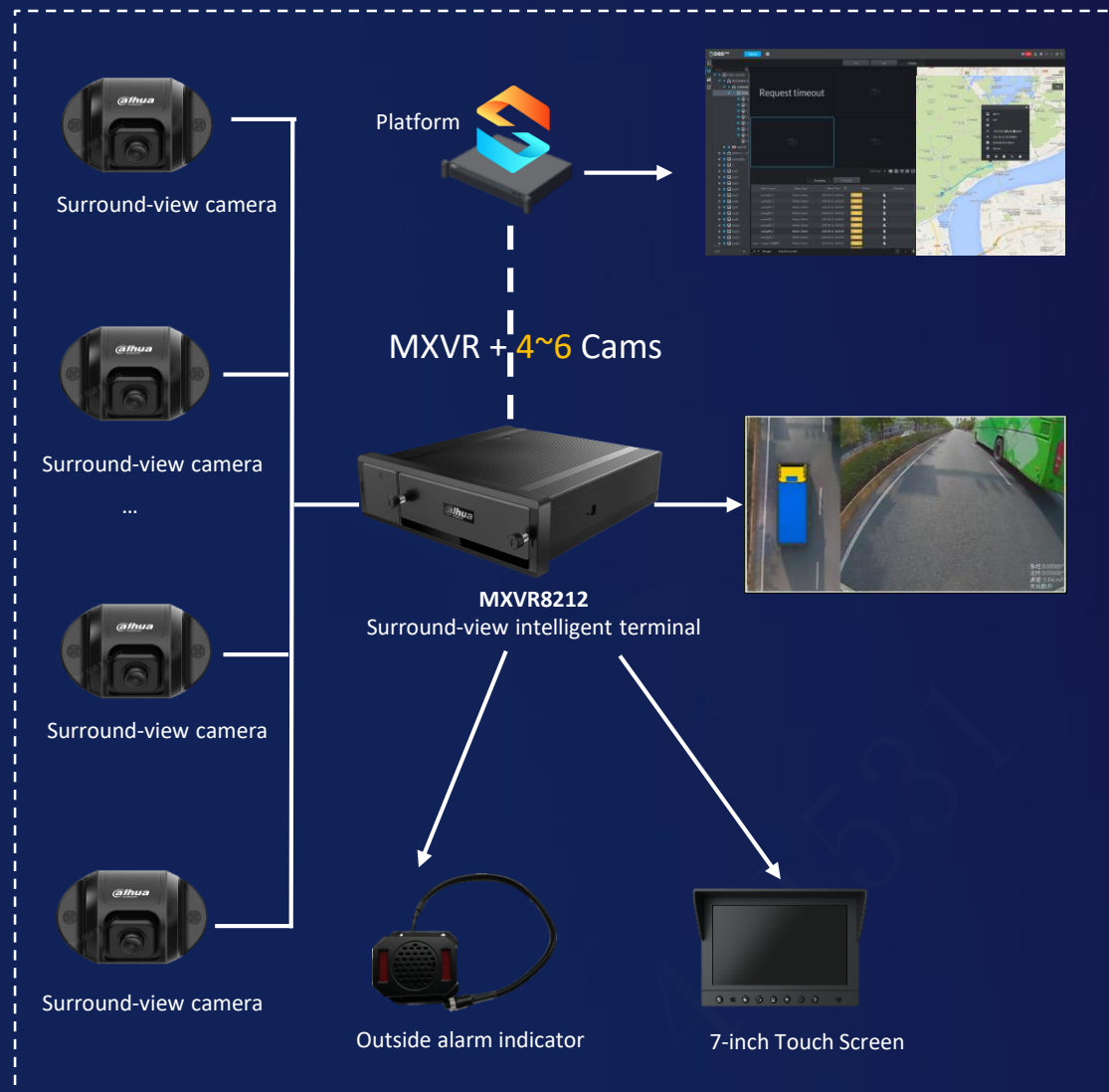


Device's Status Monitoring

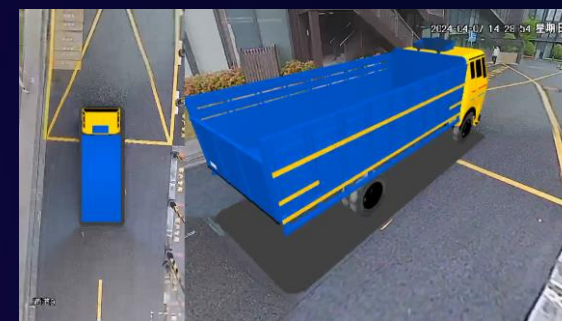
Status indicator light monitors abnormal faults

360° Surrounding View Solution

360 Surrounding View System



Night effect

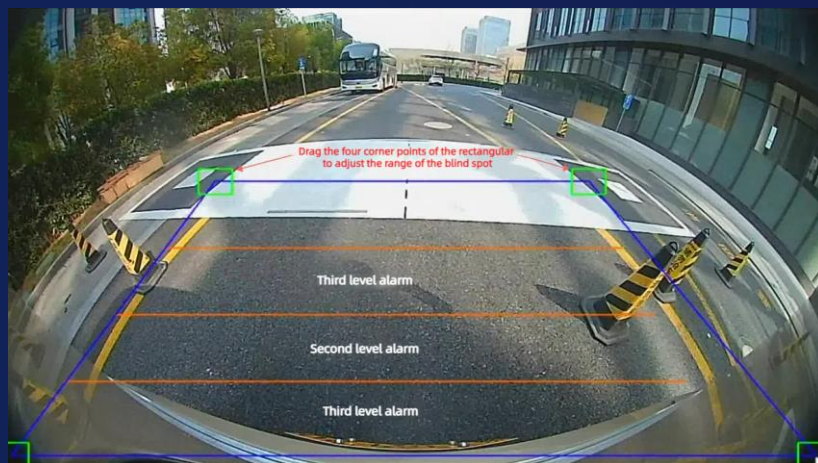


Reversing effect

Alarm Display & Highlights

Blind Spot Alarm. Alerts the driver to potential hazards in blind spots.

- Warning Icon Display: A warning icon appears on the relevant side of the surround view screen when an alarm is triggered.
- Audible and Visual Alarms: Includes both visual alerts and voice warnings for out-of-vehicle reminders.
- Coaxial HD Screen Alerts: Displays voice alerts on an in-vehicle coaxial HD screen for driver reminders.



Red — First level alarm

Yellow — Second level alarm

Blue — Third level alarm

Full-view Coverage

The 360 Vision System offers full coverage with front, rear, left, and right cameras, eliminating blind spots.



HD Image

Advanced image processing corrects and stitches images for a clear, accurate surround view.



Real-time Alarm System

The 360 Vision system has a real-time alert feature that detects and warns of nearby moving objects.



Parking Assistance

The 360 Vision system offers multi-angle views to aid in precise parking and avoid collisions.



DAHUA Company Profile

About DAHUA



Dahua Technology is a world-leading video-centric AIoT solution and service provider. To enhance the digital-intelligent innovation and transformation of cities and enterprises, Dahua has upgraded its Dahua Think# 2.0 corporate strategy from "Intelligence" to "Integrated Intelligence". For city business, the company continues to promote the transition from improved urban management to efficient urban governance, from orderly operation to operational autonomy, from enhanced public safety to upgraded security systems, and from ecological environment monitoring to ecological collaborative governance. Additionally, for enterprise business, Dahua has shifted from optimizing security systems to building a comprehensive security system, from improving production efficiency to constructing digital-intelligent manufacturing capacity, and from assisting in management to enhancing decision-making capabilities.

The company has more than 23,000 employees, of which over 50% are R&D technicians. Committed to technological innovation, Dahua invests approximately 10% of its sales revenue in R&D every year. It has established five major research institutes: Advanced Technology Institute, Big Data Institute, Central Research Institute, Cybersecurity Institute, and Product Engineering Institute. The company continues to explore emerging fields based on in-depth insights and layout of AIoT, and has extended its innovative businesses including Imou, iRAYPLE, Pixfra, Waythcan, Wisualarm, Dahua Memory, etc.

With a global marketing and service network, Dahua has established more than 200 China offices as well as 69 overseas subsidiaries, branches and representative offices covering Asia, North America, South America, Europe, Africa, Oceania and other regions to provide customers with speedy and high-quality services. Committed to enabling a smarter society and better living, Dahua has deployed its products, solutions, and services in 180+ countries and regions, covering transportation, manufacturing, education, retail, banking & finance, energy, environmental protection and various industries.



23,000+
Employees



200+
China Offices



69
Overseas subsidiaries,
branches and representative
offices



180+
Distribution Coverage
(Number of Countries &
Regions)



9,700+
Patent Applications



800+
International Patent
Applications



No.2*
Global Market Share
NO.1 Global market share of private listed companies

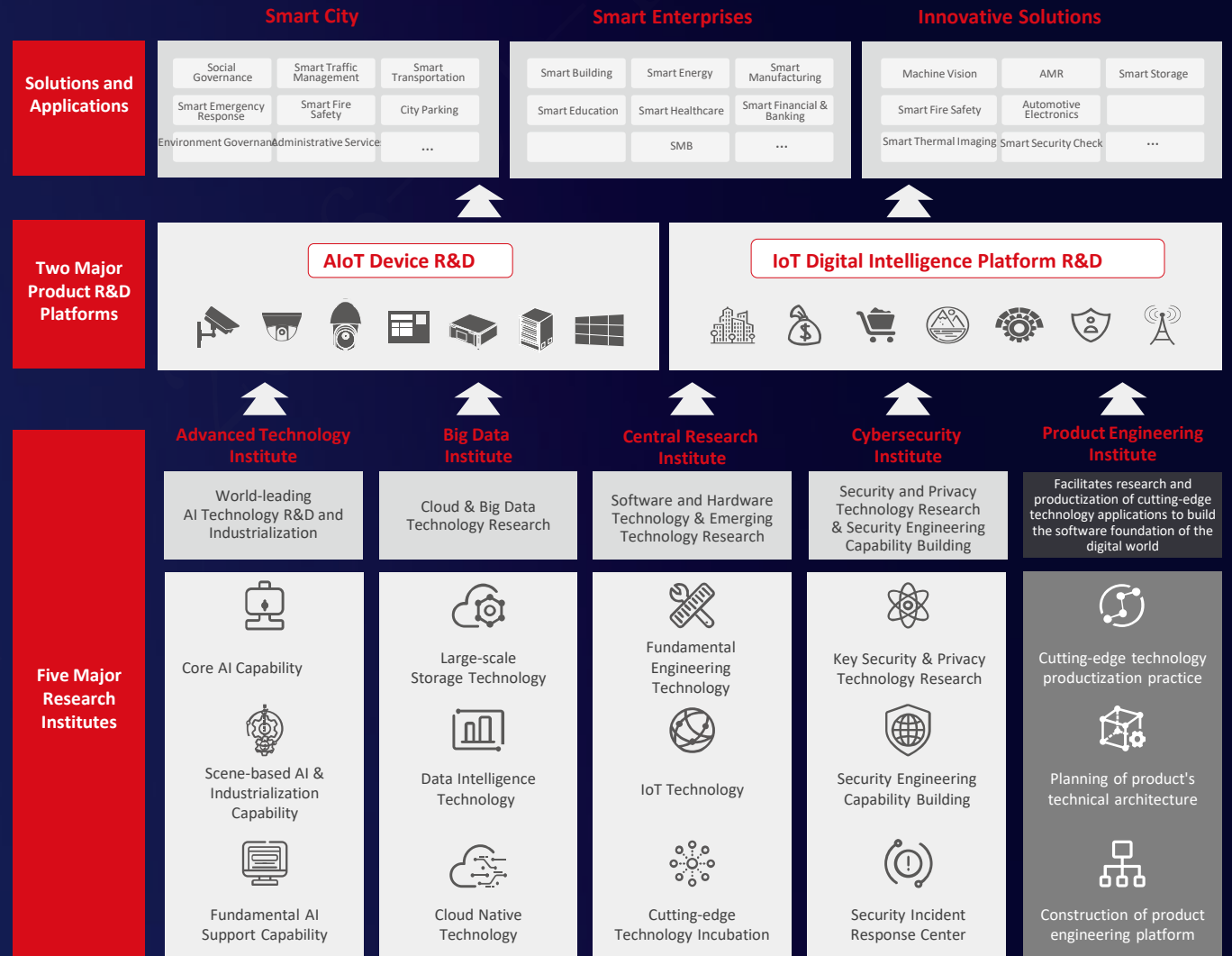
*Source: Omdia 2023 Video Surveillance & Analytics Market Share Database

Comprehensive R&D Capability



Based on the foundation of the "Five Full" capabilities, we have established five research institutes: Advanced Technology, Big Data, Central Research, Cybersecurity, and Product Engineering. This is supported by two product development platforms—software and hardware—and a full-scale R&D system that covers solutions for cities, enterprises, and SMBs. With our headquarters in Hangzhou as the hub, we have also set up R&D branches in Xi'an, Chengdu, Europe, and Latin America to strengthen our global R&D network, meet evolving business needs, and explore the limitless possibilities of technology.

Dahua Technology has a national level postdoctoral workstation and has been awarded as National Recognized Enterprise Technology Center, National Industrial Design Center, and National Innovative Pilot Enterprise. With outstanding innovative capabilities, the company continues to make breakthrough contributions and lead the industry's development.



49

National Scientific Research Projects



48

International & National Standards



94

Industry Standards



10%+

Proportion of Annual R&D Investment



70+

International AI Achievements



9

RED DOT Design Awards



17

IF International Design Awards

Intelligent Manufacturing & Global Supply Chain

Lean and Intelligent Manufacturing

The Dahua AIoT Industrial Park is the company's intelligent manufacturing industrial base and modern logistics center. It is one of the first "Future Factories" and "Digital Factory Benchmark Enterprises" in Zhejiang Province. Dahua has been continuously innovating and leading high-quality development to facilitate the informatization and upgrading of the manufacturing industry. By utilizing our digital supply chain management capabilities and big data analysis modeling applications, we enable efficient end-to-end collaboration between upstream and downstream industrial chains. We also continuously improve responsiveness, intelligent manufacturing, and intelligent management, providing high-quality intelligent products and solutions to global customers. In 2023, the company was awarded the title of "Demonstration Enterprise for the Integration and Development of New Generation Information Technology and Manufacturing Industry".



In the field of industrial manufacturing, we aim to build digital factories together with industry partners to build a collaborative, efficient, and transparent digital supply chain. From raw materials, production, warehousing to logistics, we achieved digital operation and management. With enhanced end-to-end delivery capabilities, we create the ultimate user experience for global customers.



With our smart automated factory, Dahua continues to promote the development of high-quality intelligent manufacturing and logistics through product standardization, operation standardization, and lean management. The company applies leading machine vision, automation, digitalization, AIoT and other technologies to realize assembly automation, unmanned testing and visual supervision in key processes of core product production. We also introduce all kinds of robots and intelligent logistics equipment to improve the automation of material warehousing, distribution, production and handling, enabling automated inbound and outbound for finished products. Based on business scenarios, we improve the depth of human-to-machine, machine-to-machine, machine-to-system, and system-to-system interconnections. Through the digitization of product data flow, manufacturing control flow, and order delivery flow information, we efficiently cooperate with suppliers at all levels to continuously meet customer needs and contribute to customer success.

Global Supply Chain



Dahua has been utilizing digitalization to build multi-organizational manufacturing and supply systems for global customers. The company has established two manufacturing centers in China (Hangzhou and Changsha), one manufacturing supply chain center in Vietnam, two hub supply centers in Europe (Hungary and the Netherlands), as well as several regional sub-warehouses of key overseas subsidiaries. To further improve supply efficiency and ensure supply sustainability, Dahua continuously optimizes and integrates digital platforms to adapt to multiple bases, logistics centers, and new business models. At the same time, we continue to promote the intelligent upgrading of supply centers, expand global supply capabilities, and ensure efficient, stable, and secure supply.

Whole Process Quality Management

Our comprehensive quality assurance system ensures the refinement of the quality management process, drives high-quality development, and helps customers achieve sustained success.

Sales Quality	R&D Quality	Purchasing Quality	Manufacturing Quality	Delivery & Service Quality
Quality Improvement Based On Customer Satisfaction	Quality Improvement Based On Process	Quality Improvement Based On Risk Management	Quality Improvement Based On Corporate Culture	
<ul style="list-style-type: none">• Focus on customer needs and expectations• Delve deeply into customers’ pain points and requirements• Follow industry standards and make internal improvements	<ul style="list-style-type: none">• Advocate for an accurate, all-employee participation and constant quality improvement culture• Prioritize the quality of processes and results	<ul style="list-style-type: none">• Identify the main business process quality risk, establish quality assurance red line• Establish root cause backtracking and prevention mechanism, and continuously improve process quality standards	<ul style="list-style-type: none">• Adhere to an organizational culture of “rigor and conscientiousness, zero mistakes, continuous improvement, and pursuit of excellence”• Driven by improvements in the four dimensions of quality, safety, cost, and efficiency• Improvement measures: Six Sigma, QCC, TQM, lean management, suggestions.	
Quality Management System + Quality Management Platform				

Integrated Delivery & Services

Dahua Technology provides users around the world with a multi-dimensional service network of headquarters, branch offices, and authorized service stations, aiming to improve service experience, user perception, and overall user satisfaction.

Creating Value with Efficient Services

- Technical Support
- Repair Service
- Project Management



15+
Call Centers



4
Technical Support
Centers



110+
Service Centers



8,000+
Technology Service
Personnel



























2,000+
Service Partners



20+
Warehouses

Business Scope

Smart City	Efficient Urban Governance Autonomous City Operation Security System Upgrade Collaborative Ecology Governance							
	 Social Governance	 Smart Traffic Management	 Smart Transportation	 Smart Emergency Response				
	 Smart Fire Safety	 City Parking	 Environment Governance	 Administrative Services				
Smart Enterprises	Comprehensive Security System Digital-Intelligent Productivity Enhance Decision-making Capabilities							
	 Smart Building	 Smart Campus	 Smart Manufacturing	 Smart Education				
	 Smart Energy	 Smart Banking & Finance	 Smart Healthcare	 Smart Culture & Tourism				
Innovative Solutions	Actively innovate and explore emerging areas of AIoT							
	 Imou	 iRAYPLE	 Pixfra	 Hirige Automotive	 Waythcan	 Wisualarm	 Operation Service	 Dahua Memory

R&D Capability | Image Development

ROI metering + fill light linkage exposure technology

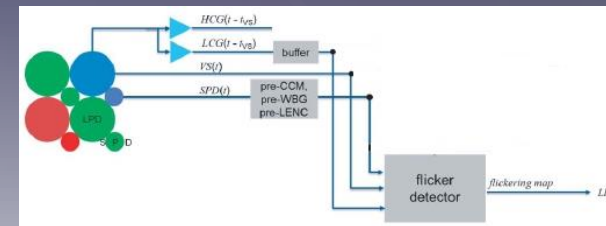


Brightness comparison of faces in backlit scenes



Face comparison in smooth scene

LFM (LED Flicker Mitigation) technology



LCG, SPD, and VS are independently exposed at different time periods, and the illuminance calculated from them can be used to detect whether the illumination is constant. An SPD exposure time of 11ms or more is guaranteed to capture at least one on-cycle of the LED, so using it directly or increasing the weight in the combined image will greatly **reduce flickering**.

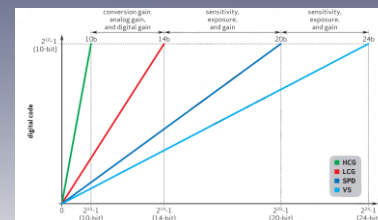
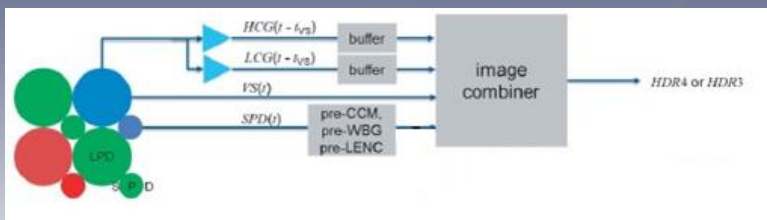


LFM off



LFM on

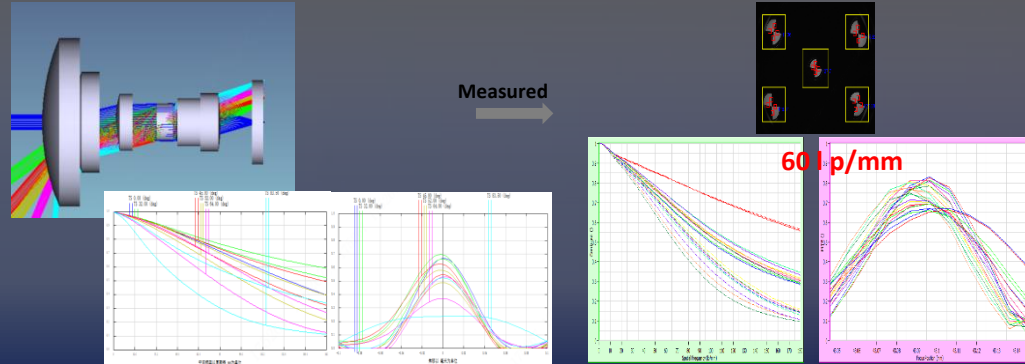
WDR (Wide Dynamic Range) technology



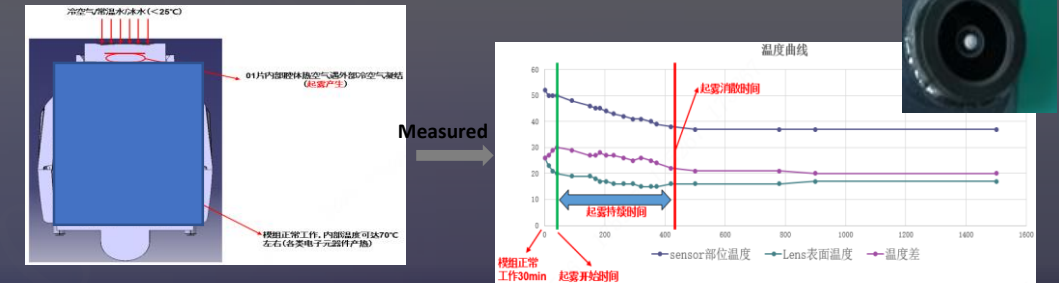
HCG, LCG, SPD and VS are four-in-one, synthesizing 24bit high dynamic images, in which HCG, LCG, VS are generated on large pixels; SPD is generated on small pixels. **With WDR technology, the camera compensates for images where there are dark and bright areas to make the video streams are more clearer.**

R&D Capability | Optical Development

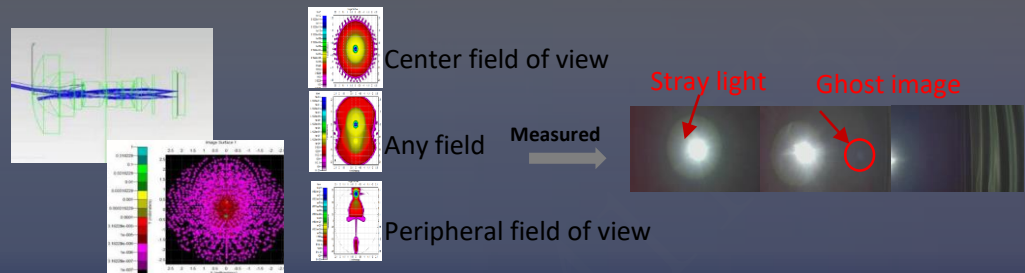
Lens optics designed with MTF and Defocus controls



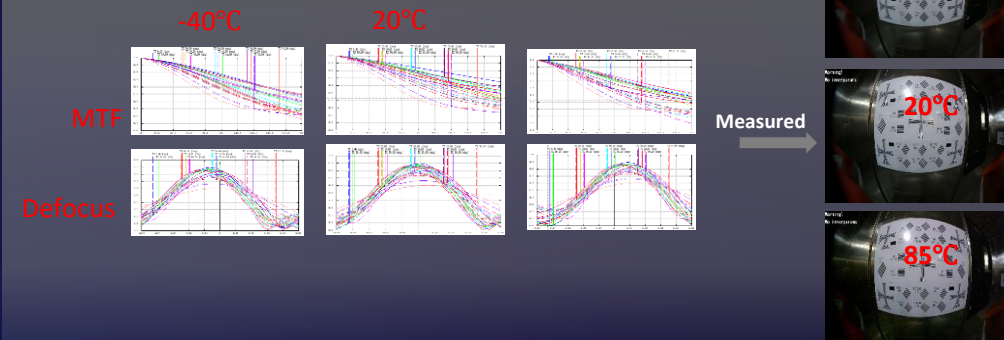
Lens surface fog analysis



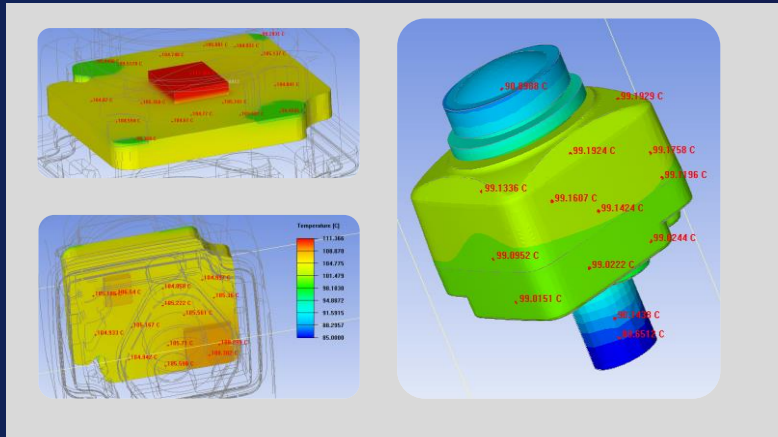
Lens stray light ghost image simulation test



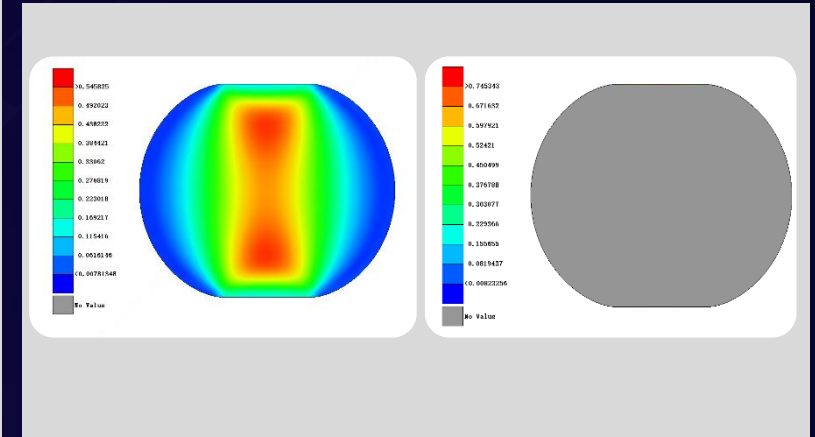
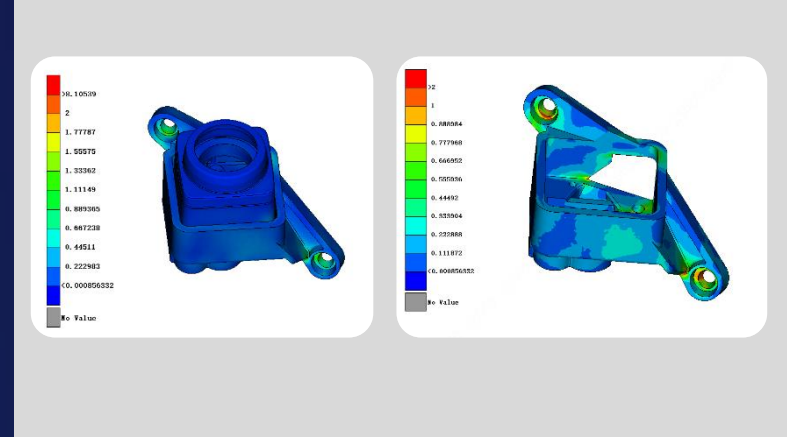
Lens MTF & defocus temperature excursion simulation analysis



R&D Capability | Mechanical Design



Heat dissipation simulation design



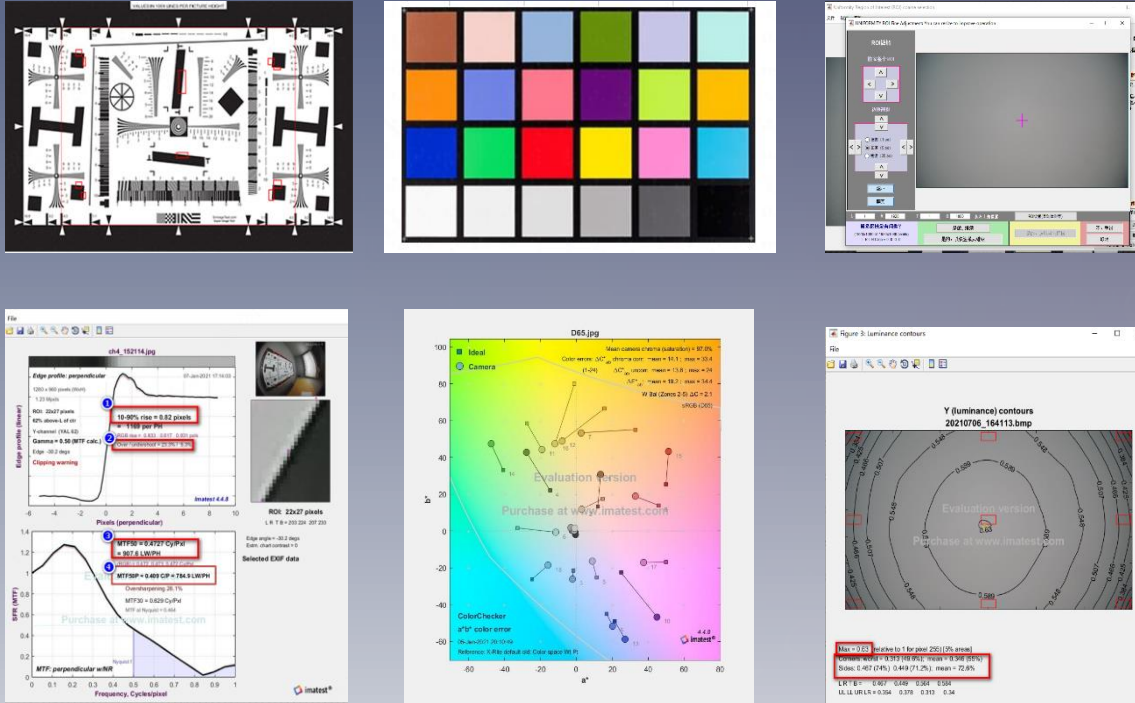
Simulation result		
Component	Temperature	Power 0.55W
DS90UB933	TJ=150 Tc=140	111.3
NJW4750	TJ=150 Tc=140	106.5
DH200805	TJ=125 Tc=115	108.3
Main board	Tc=105	105.1
Shell	/	99.1
Environment	/	85

Evaluate the strength of the bracket in advance through the mechanical simulation design, reduce the repetition of structural design, improve product reliability, and shorten the product design verification cycle.

Evaluate the pre-compression of the sealing ring through mechanical simulation design, simulate & evaluate the waterproof effect of the sealing ring according to the different hardness and pre-compression of the material, reduce the repetition of structural design, improve product reliability, and shorten the product design verification period.

R&D Capability | System Testing

Image Lab Test



Dahua Image Lab can perform a series of image tests such as **color reproduction, white balance, grayscale, MTF, dynamic range, FOV and brightness uniformity**. The field test can measure the image effect in multiple scenes such as backlight, smooth light, scene of day and night and in the tunnel, etc.

Outdoor Site Test



Manufacturing | Smart Industrial Production Line

Fuyang Production Base



- Class 10,000 dust-free workshop
- Complete special equipment
- A total of 156 employees, more than 60 engineers support the design and optimization of the process

Year	2021	2022	2023
Capacity (Unit: 10,000 sets/year)	72	288	576

Assembly workshop - 4000 m²



Key equipment



AA



Air tightness



Final
inspection

Manufacturing | Core Production Line

16000m² Floor area of workshop

18 SMT automatic production line

33 million Annual single board production capacity

Automatic PCBA workshop



SMT (ASM)



FCT/ ICT



X-RAY (YXLON)



Dust-free module workshop



Millimeter wave radar line



AA



Quality | Product Audit & Verification

There are **six special laboratories** in the supply chain manufacturing base, mainly including **life, machinery, environmental protection, failure analysis** and **environmental testing laboratories**, which can carry out more than 50 tests on the reliability, vibration, drop, salt spray, metallographic analysis and safety regulations of materials and products, effectively ensuring the quality of incoming materials and the stability of mass production products.

Weather resistance test

thermal shock chamber
High temperature and humidity environment box
5% salt spray test chamber



life test

Cable swing tester, conductive slip ring, smart lock, mouse button life tester, motor, ICR, horn life tester



Qualitative analysis

Sampling machine, grinding machine Metallographic microscope, three-dimensional dimension measurement
Melting finger tester, carton bursting edge pressure tester



EMC

Insulation resistance tester
High voltage withstand voltage tester
Electrostatic discharge and leakage current tester



Mechanical experiment

Steel ball impact test bench
Drop test bench
Vibration test bench



RoHS

EDX heavy metal tester
GCMS O-benzene tester



A blurred, high-angle photograph of a busy multi-lane highway with many cars and a green bus, serving as a background for the central text.

「ENABLING A SAFER SOCIETY AND SMARTER LIVING」

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WEU SOLUTION TEAM