



# LOGISTIC SOLUTION WITH MACHINE VISION

- Less Labor
- Higher Efficiency
- No Human Mistakes



#### Less Labor

- Replace manual operation with intelligent system
- Automatic dimensioning, weighing & barcode reading
- Support OCR



#### Higher Efficiency

- Minimize operational steps and optimize the process
- Improve operation speed
- Eliminate the efficiency bottleneck



#### No Human Mistakes

- Intelligent code reading algorithm
- High recognition rate
- High error-tolerance

## INDUSTRY BACKGROUND

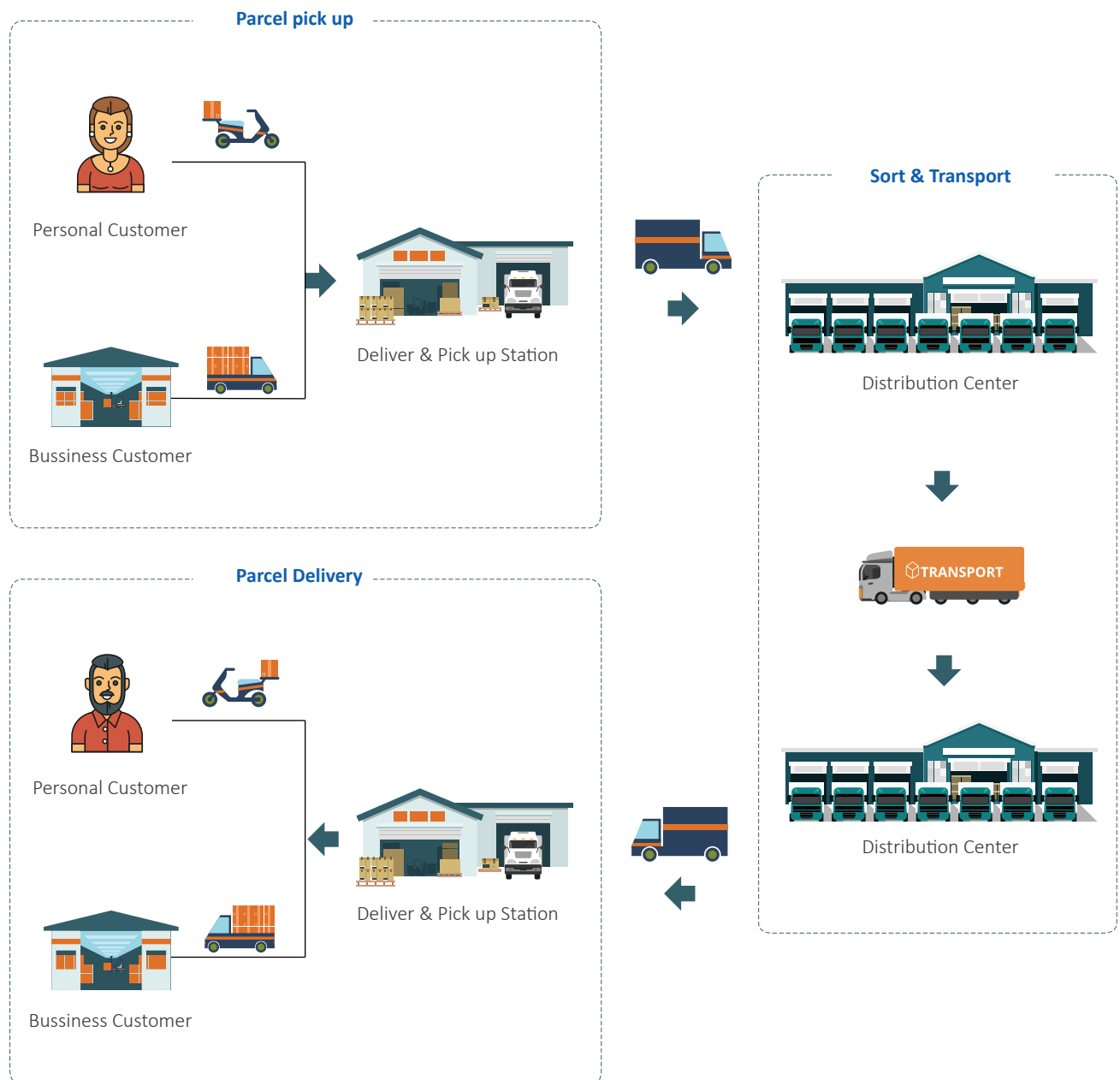


With the fast development of modern logistic infrastructure, especially the fast growing of e-commerce industry, like Amazon, Alibaba etc, How to deliver the parcel efficiently and cost-effectively to end user has become a common challenge in the industry.

Annual delivery volume in China has surpassed about 40 billion parcels in 2017. That means over 100 million parcels have been transported every day in average.

Most end-users are expecting 2<sup>nd</sup> day delivery and even same day delivery in some applications. For most of the regions in China, 2<sup>nd</sup> day delivery is guaranteed with the high running efficiency of the logistic networks.

## Logistic Network Work Flow



- **Distribution Center:**

- Usually operated directly by logistic company.
- Locate in key transportation cities.
- Sort the parcels and transport them to different destinations through the main logistic network.

- **Deliver & Pick up Station:**

- Franchise or operated directly by logistic company.
- Locate in districts, streets etc.
- Pick up and deliver the parcels.

# CHALLENGES AND SOLUTIONS

## Current Challenges

### Resource Issues

Limited man resource  
and increased cost

### Operational Issues

Low operation efficiency  
and inevitable human  
mistakes

### Competition Issues

Increasing competition  
and lower profit

### Satisfaction Issues

More speed and intact  
parcels

## How to solve the challenges



- Intelligent algorithm



- Automation device



- Process optimization



- Speed improvement



- Labor reduction



- Cost reduction





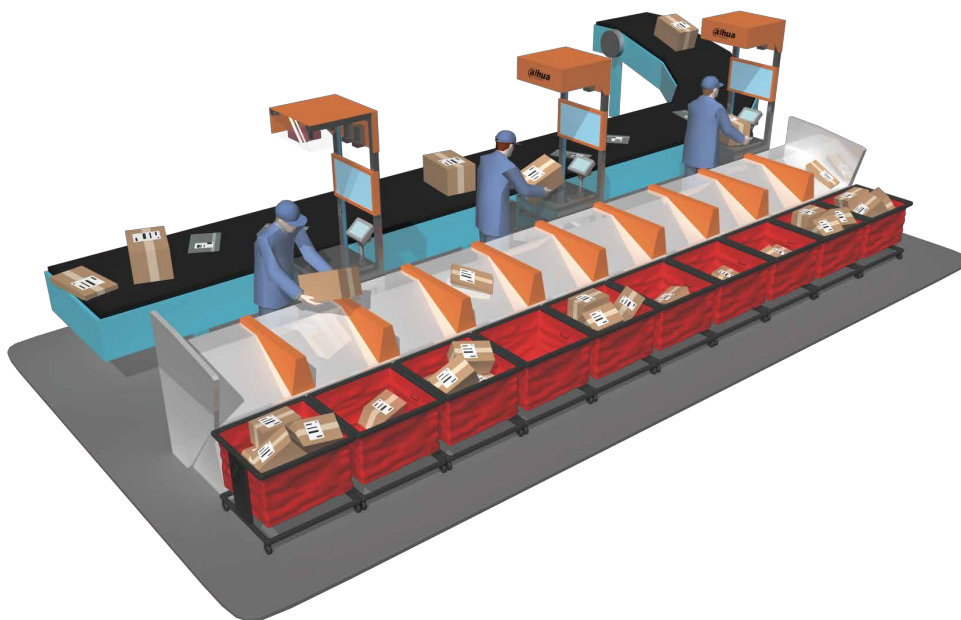
## APPLICATION AREA

### Deliver and Pick up station



#### Traditional operation mode

- Manual operation
- Operators use barcode gun to scan the delivery list and weighing the parcels
- The speed is low, it is about 1500pcs/h typically

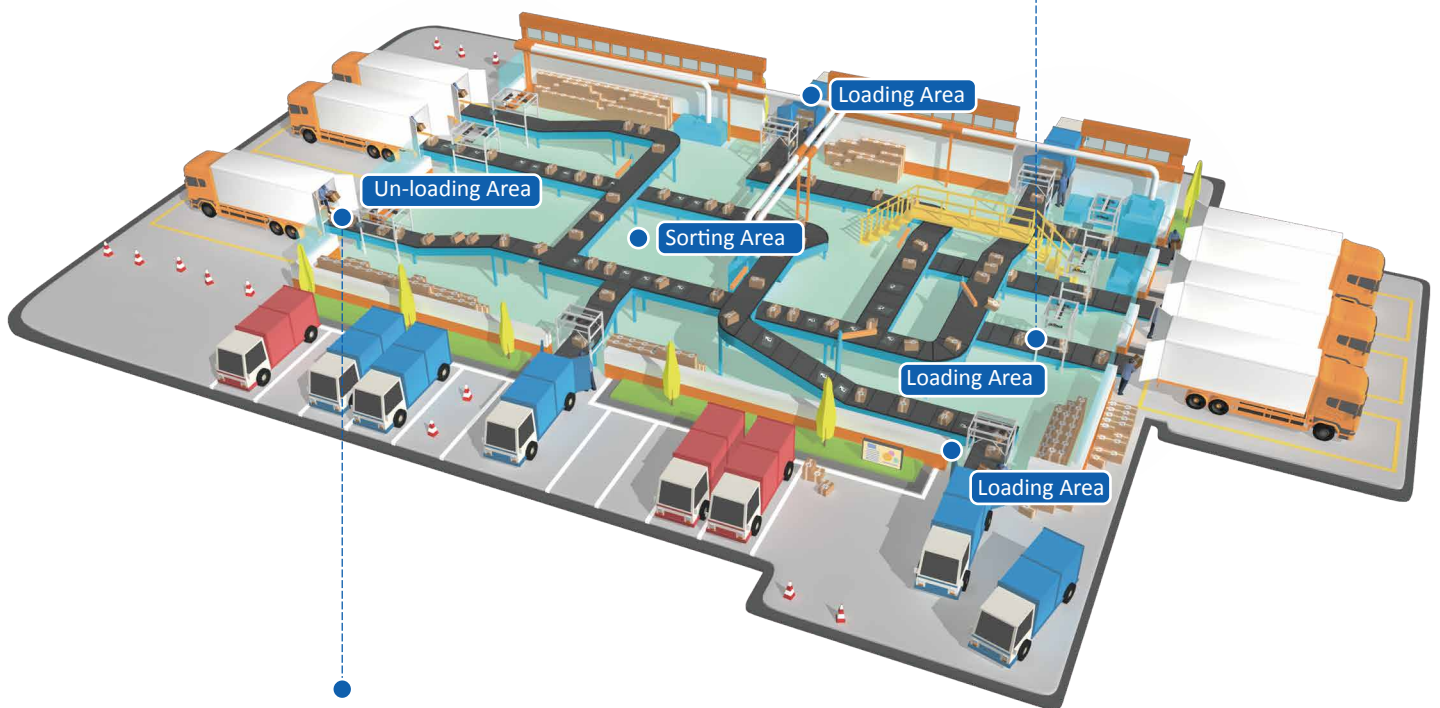


#### Static DWS system for deliver & pick up station

- Static DWS integrate the barcode scanning, weighing and dimensioning(optional) together, record these information automatically, the speed is fast, it can process 3600pcs/h typically.
- The operation efficiency is more than double and the average cost can be decreased.

## Distribution Center

- Loading Area



- Un-loading Area

## • Un-loading Area



### Traditional operation mode

- 2 operators unloading the parcels from truck.
- 2 operators place the parcels to right orientation to make sure the barcode is upside.
- 2 operators scan the barcode with the barcode gun and weight it.
- No dimensioning equipment.



### Dynamic DWS system for un-loading area:

- With dynamic DWS system, it can scan barcode, get the weighing and dimension data automatically. Resource will be saved greatly.
- Un-loading area is the bottleneck of the total flow , DWS system provides faster speed and lower error than human operation. When the belt speed reach 1.5m/s, it can process 3000pcs/h typically.

## • Loading Area

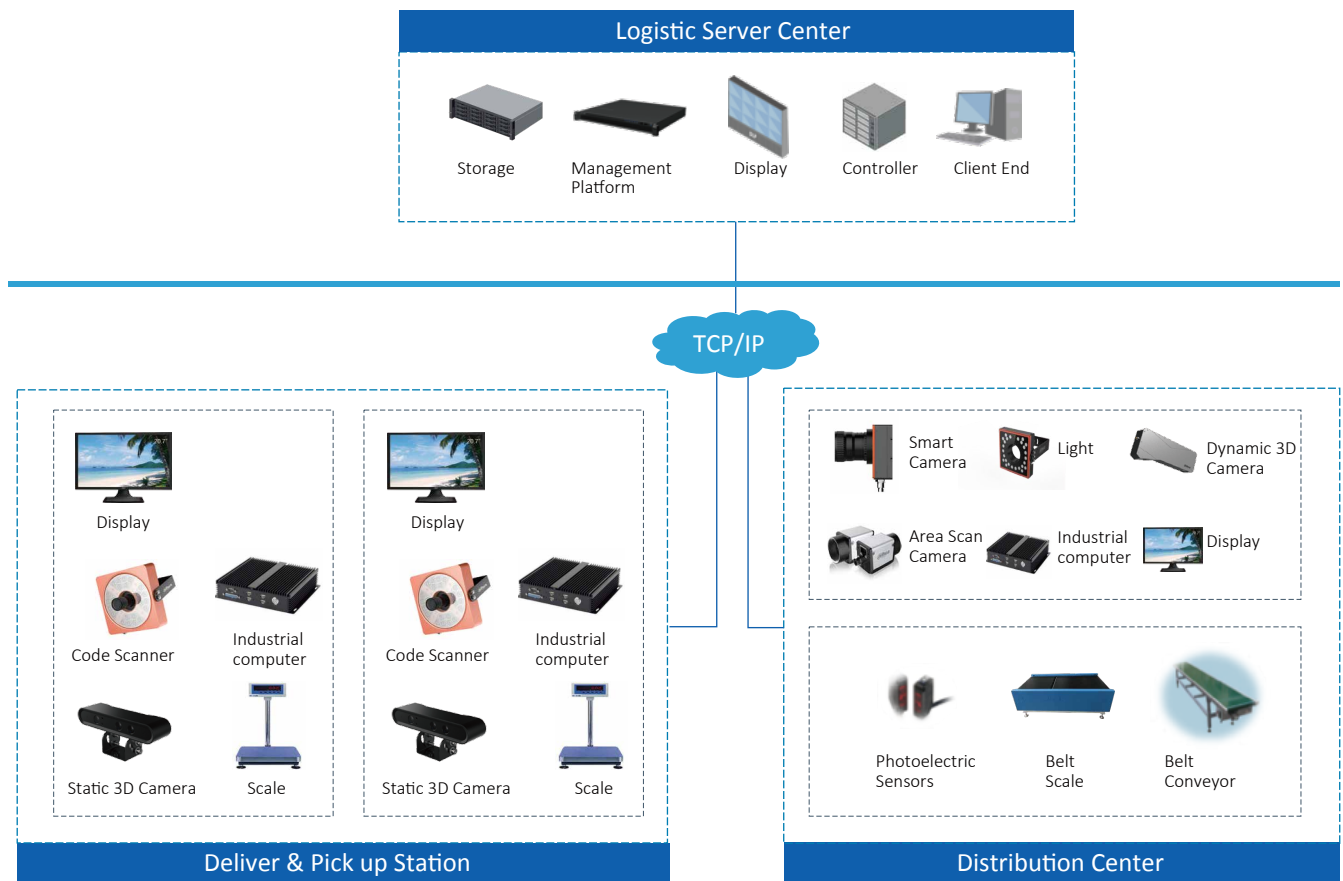


### Barcode scanning system for loading area:

- Traditionally, in the loading area, one operator scan the barcode with the barcode gun to make sure the parcels is assigned to the right loading port.
- With Barcoding reading system (Removing dimensioning and weighing from DWS),it can scan barcode automatically, timely warning and move to the abnormal port when mismatch identified.

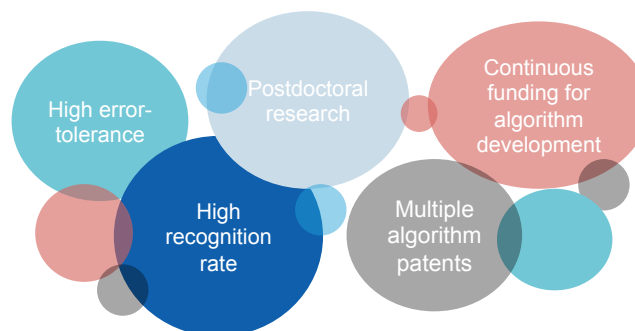


## SOLUTION STRUCTURE



## SOLUTION HIGHLIGHT

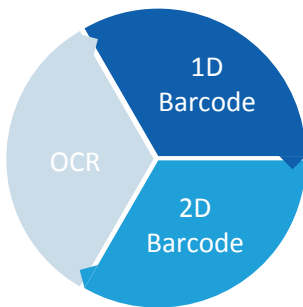
### Intelligent Algorithms



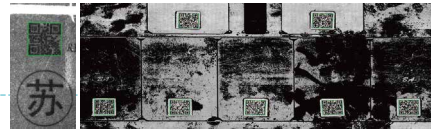
- Dahua has developed intelligent algorithms with high error-tolerance and recognition rates which have surpassed most international algorithms in real-world recognition applications.
- Dahua has a postdoctoral research center dedicated to the development of intelligent algorithms and has filed multiple algorithm patents.
- Intelligent algorithms are widely used in the logistics industry for code-reading (1D and 2D barcode) and OCR recognition.

## Code Reading

- Supports English, Chinese, number, and symbol recognition
- Supports automatically locating text area
- Supports automatically correcting text direction and automatic text splitting
- Supports machine learning (deep learning) recognition
- Supports automatic text correction with dictionary support



- Supports QR, DM etc.
- Supports recognition of minimum 2 pixels
- Supports recognition of minimum 5 pixel-value difference for white and black blocks
- Supports 45° perspective angle
- Tolerates complex conditions including background texture folds, obstruction, scratches, blurring, and uneven lighting



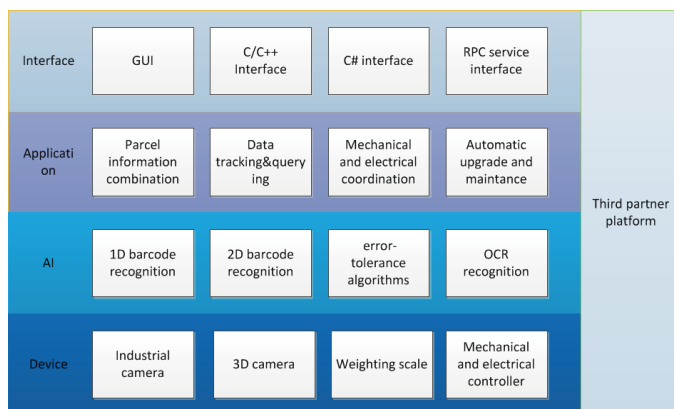
- Supports code128, code39, code bar, code93, interleaved 2 of 5, EAN8, EAN13, UPCE, UPCA, etc.
- Supports 45° perspective angle
- Over 99% recognition ratio under complex background situations
- Tolerates complex conditions including background texture, folds, obstruction, scratches, blurring, and uneven lighting.



## High Quality Product & Perfect After-sale

- Each Dahua industrial cameras undergoes extensive tests, including:
  - 13 day-40°C- 60°C temperature ALT (accelerated life test)
  - 48 hour 50°C high temperature test
  - 24 hour-30°C low temperature test
  - 24 hour 3 axes & 6 directions random vibration test at 3g acceleration
  - 1 corner, 3 edges, 6 surfaces drop test at 1m height
  - 6 kV electrostatic discharge test on metal surfaces
  - 1kV common mode/2kV differential mode (10/700μs) PoE interface voltage surge test
  - 2kV common mode (1.2/50μs) power supply interface voltage surge test
  - Standard class B EMC test
- All of Dahua Technology's industrial cameras come with a 3 year warranty at the time of product purchase.
- After-sale team can cover 180 countries for globally.

## Compatibility & Openness



### Compatibility

- Seamless intergration with the existing logistic ERP, CRM, OA etc. system.
- Compatible with third-party devices of logistic manufacturer, such as Belt Scale, Photoelectric Sensors, Swing Arm Controller etc.
- Supports different coding reading including 1D, 2D barcode and OCR.

### Openness

- Based on open architecture
- Supports SDK for the purpose of integrating with third-party systems
- SDK is compliance with GenICam standard.

## Flexible Customization



Dahua can provide flexible customization according to actual application. Depending on key parameters such as barcode type, parcels size, belt speed etc. Dahua is able to design the most appropriate DWS system for customer.

## Surveillance Video+

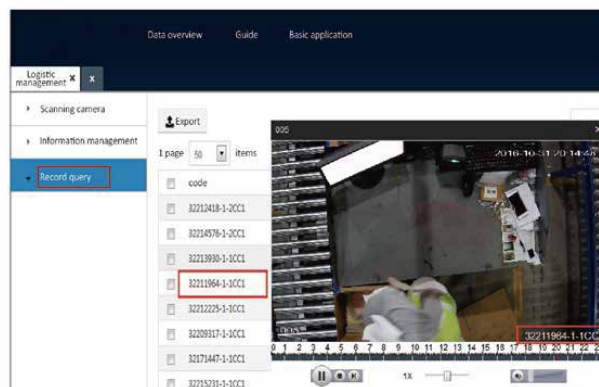
When the parcel barcode information Integrated with surveillance video, we can enable a Logistics Visual Tracking Management System to customer.

### *"One barcode, one video"*

combine the barcodes with the video to help customer to track the parcel's status.

#### System Operation Process:

- Industrial camera captures barcode information and images, then transfers them to the platform.
- Platform receives barcode information and integrates with IPC video, then saves images and videos.
- A barcode search can be performed which returns all videos for the related code.



## PRODUCT SHOWCASE

### HR-SL2460R-A1



- Key Components:
  - Camera: Dahua 3000 series camera, 6MP Effective Pixels
  - Lens: 2/3", 16mm industrial lens
  - Data transmission: GigE interface
- Compact design with 24-leds light, supports brightness adjustment
- Supports high speed scanning and high definition picture
- Low power consumption

### A5501MG20



- Dahua 5000 series camera, 5MP Effective Pixels
- 1Gbps Ethernet interface, max 100m transmission
- 128MB on-board frame buffer
- Supports several image data formats output /ROI /binning, decimation /mirror etc.
- Supports POE and DC 6-26V wide-range power supply

### S5501MG00



- 5MP, global shutter, CMOS series product
- 512MB RAM and 512MB non-volatile flash memory
- Supports software trigger/external trigger/free run etc.
- Gigabit Ethernet interface with max.1Gbps bandwidth
- Abundant IO interfaces supports RS232/485, 3 Opto-isolated inputs and 3 Opto-isolated outputs
- Supports C/M12 mount lens and optional built-in light source
- Industrial grade M12 connector, IP67 protection level
- Supports DC8V~26V wide-range power supply, suitable for industrial DC12V/24V voltage
- Abundant algorithm including ID, Pattern-Match, locating, measurement and OCR etc.

### OPT-43C35M-MP



- 35mm fixed focal length
- C-Mount interface
- F2.0 aperture
- 4/3" Image Circle
- 8MP resolution
- Angle of view: 35°×28°×21°

### DH-SL6500B-A/S



- 65pcs white led
- Supports intelligent flashing mode.
- High reliability
- low power consumption



## PRODUCT SHOWCASE

### D5201MU00



- Key Components:
  - Camera: Dahua 5000 series camera
  - Lens: 2/3", 8mm industrial lens
  - Laser: 200mw red laser light
  - Data transmission: USB 3.0 interface
- High speed output capability of 3D measurement in mm-level after factory calibration procedure
- Flexible configuration of working distance and field of view Integrated 3D calibration tool
- Max. measurement: 3000\*1000\*1000mm(L\*W\*H)
- 5mm measurement accuracy
- Supports point cloud and volume measurement

### HR-D3300



- Max. measurement: 400\*400\*400mm (L\*W\*H)
- 5mm measurement accuracy
- Integrated 3D calibration tool
- Supports USB2.0/3.0

### ARC-2300-G4-00A5



- Intel i5-4570S@3.6GHz , Four-core
- 4G DDR3L
- 500GHDD speed 7200
- Supports 4\*10/100/1000M Ethernet ports
- Supports 4\*USB 2.0 Port and 2\*USB 3.0 Port
- Supports VGA and HDMI display
- AC100~240V input

### ARC-1500-00B1



- Intel G2120@3.1GHz , Dual-core
- 4G DDR3
- 500GHDD speed 7200
- Supports 2\*10/100/1000M Ethernet ports
- Supports 4\*USB 2.0 Port and 2\*USB 3.0 Port
- Supports VGA and HDMI display
- AC100~240V input

### DHL22-F600



- 20.7 inch display
- 1920\*1080 resolution
- VGA and HDMI input
- AC 100~240V input

## SUCCESS CASES



### Yunda Express

Dahua upgrades the deliver & pick up stations with static DWS system and distribution center with Dynamic DWS system successfully. More than one thousand sets of systems have been deployed for 2017 year's "Tmall double eleven" and help them to win the speed and customer's satisfaction.



### Best Express

Founded in 2007, 678 operation centers and more than 420 million square meters of warehouses and distribution centers have been established in China. Dahua provide the Dynamic DWS solution to its distribution center. The solution includes hundreds of DWS system.



### Deppon

Founded in 1996, Deppon has more than 10 thousand standardized retails and over 1.1million square meters transfer centers across China till August 2017. They have opened international transportation routes to Korea, Japan, Thailand, Singapore, Malaysia and Vietnam etc. Dahua cooperate with them from 2017 year and supplied them DWS System together with Surveillance Video.

## SUCCESS CASES



## ENABLING A SAFER SOCIETY AND SMARTER LIVING

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\* Design and specifications are subject to change without notice.

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