

Logistic Vision Solutions

Vision for Imagination

Hikrobotics.com

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Hikrobot

Hikrobot is a global manufacturer and supplier of mobile robot and machine vision products. Relying on the over 2000 R&D staff, Hikrobot develops business areas including mobile robots, machine vision, etc. Adhering to the innovation of hardware, software and platforms, it is committed to continuously promoting the intelligentization and leading the intelligent manufacturing process.

Vision Solutions for Logistics

Based on years of R&D and accumulation in the image processing field, HIKROBOT's machine vision business deeply integrates the development needs of the logistics industry. With high-speed, high-accuracy code reading, OCR, 3D vision algorithms and other technologies as the core, HIKROBOT released a variety of machine vision solutions for logistics .

The solution aims at various needs of the logistics industry, including the six-sided DWS system (as the core of package information collection). The Singulation system (which greatly improves the efficiency of the subsequent information collecting and sorting). The Robotic parcel-feeding system (used to solve Cross-belt manual feeding problems), and the dynamic barcode reading and positioning system that realizes package traceability, etc., to help users achieve information digitization and intelligent upgrades.

Overview

Background

According to statistics, with the booming development of e-commerce, express delivery logistics presents rapid growth every year. Millions of consumers across the world shop using e-commerce each day and bring billions of parcels. To meet the soaring demand, all the express companies are seeking to replace manual work with automation solutions, among which the automatic information collection system is indispensable. Overseas, taking the United States as an example, the volume of express parcels reached 21.5 billion in 2021, annual growth rate of 6% compared to last year. Revenues totaled $163 billion, up 16 percent year-over-year. According to forecasts, the United States will reach 40 billion express packages by 2027. Automatic information collection system can provide accurate charging basis, real-time sorting information, reasonable vehicle management, and long-acting historical data. As the core system of the express transport phase, it hopes to be stable, efficient, accurate and timely.



Industry Pain Points

High Operating Costs

Medium to large-scale transit centers face an increasing demand for labor, resulting in skyrocketing costs. During major e-commerce events, temporary staffing needs surge, making recruitment challenging. High-intensity work leads to high turnover rates and complicating personnel management.

Low Manual Efficiency

Traditional parcel information collection relies heavily on manual labor. Irregularly shaped parcels often require multiple handling steps such as lifting and flipping, further reducing efficiency.

High Labor Intensity and Human Interference

Currently, most domestic and international logistics companies charge based on weight. Human interference significantly impacts the billing process, leading to inefficiencies in management and communication. Additionally, the use of numerous parcel bags for small package bundling and transportation requires prolonged barcode scanning and weighing, increasing labor intensity and time consumption.

Inability to Measure Certain Parcels Manually

As the demand for timeliness in modern logistics grows, air transportation has become a key competitive arena for courier companies. Dimensional weight pricing is increasingly used for air freight. However, the irregular shapes of many air parcels make it impossible for manual measurement to cover all packages for accurate billing.

Logistics Process Map



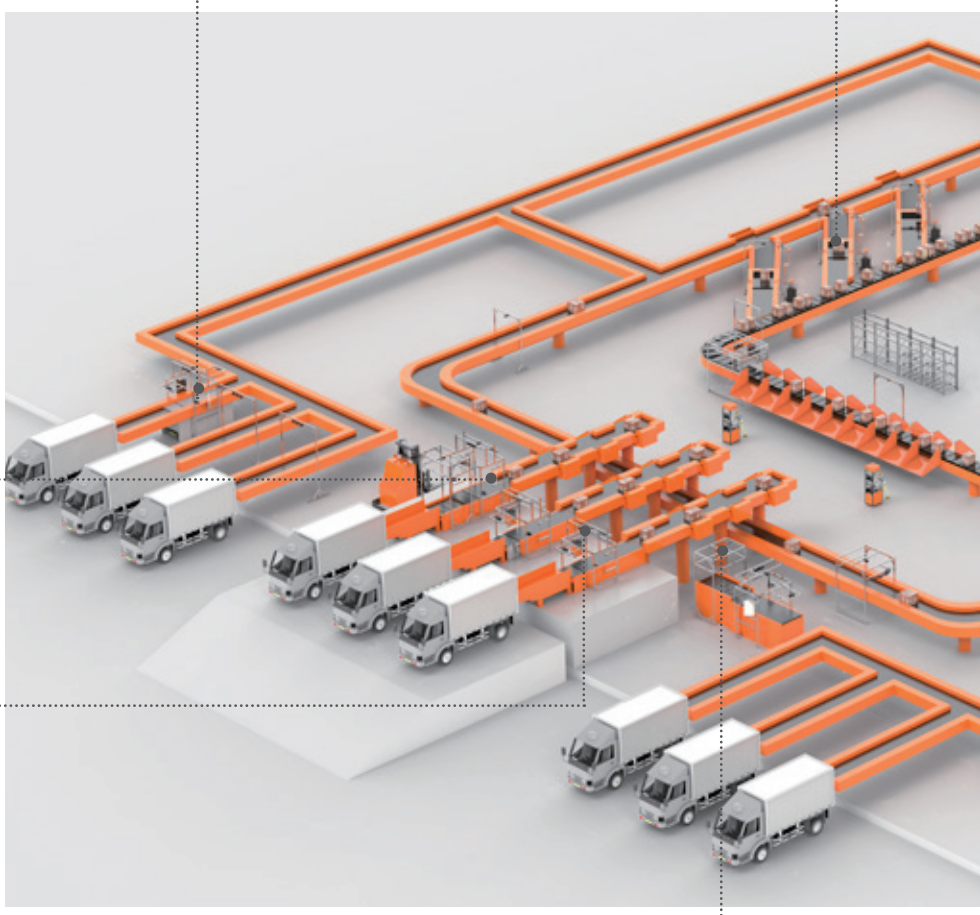
Dynamic Scanning System



Parcel Tracking & Mis-Sorting Detection System



Dynamic DWS System





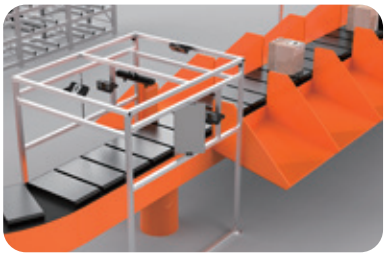
Singulation System



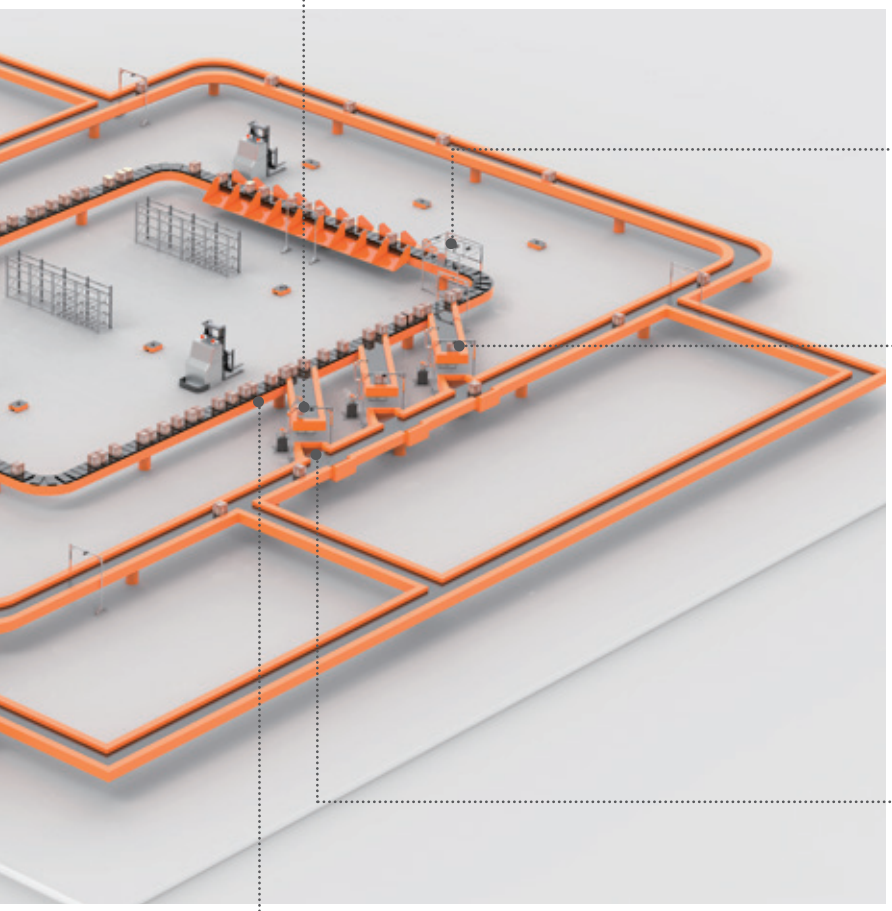
Six-Sided Code Reading System



EDP System



Cross-Belt Five-Sided Scanning System





EDP System



Parcel Anti-Overlapping System



Robotic Parcel-Feeding System



Parcel Anti-Overlapping System

Solution

The Parcel Anti-Overlapping System is built with logistics code reading set paired with a self-developed control algorithm. It identifies and locates parcels on the conveyor belt, adjusting belt speeds to separate stacked parcels. Combined with a Singulation System and a Empty, Double and Position (EDP) Detection System, the solution ensures that no double packages enter the cross belt, thus achieving automated parcel feeding across the conveyor line.

Advantages

- **High performance:** With the self-developed control algorithm, the system delivers superior anti-overlapping performance, particularly under dense stacking conditions.
- **Flexible deployment:** Simple parameter configuration enables quick debugging and implementation of the solution.
- **Strong customization:** The system supports customizable communication protocols, allowing seamless integration with various PLCs.

Parameters	Hikrobot Equipment	Manual
Max. efficiency	7200 pph	Approx. 2000 pph
Double stacking rate	0.4‰	Unwarranted

Recommended List

Model	Description	Quantity
MV-PD010003-06M-12C	Logistics Code Reading Set	5 to 7
Industrial PC	Additional	1





Singulation System

Solution

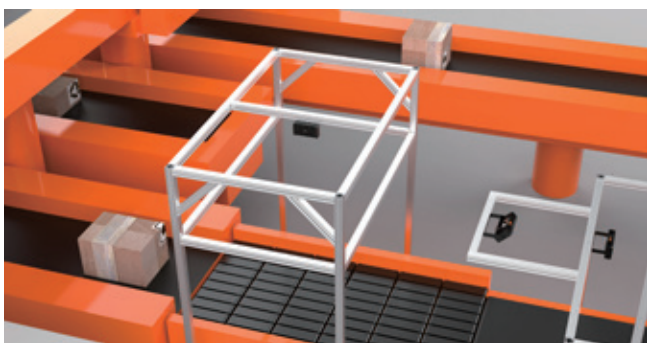
Hikrobot Singulation system uses RGB-D Smart Camera as the core of its vision system. Based on build-in 3D processing and deep-learning instance segmentation algorithms, the camera is able to locate each parcel accurately in real time. The system also provides singulation control software with integrated PLC control algorithm to realize precise control of modular belt-actuators so that parcels can be separated with predefined intervals.

Advantages

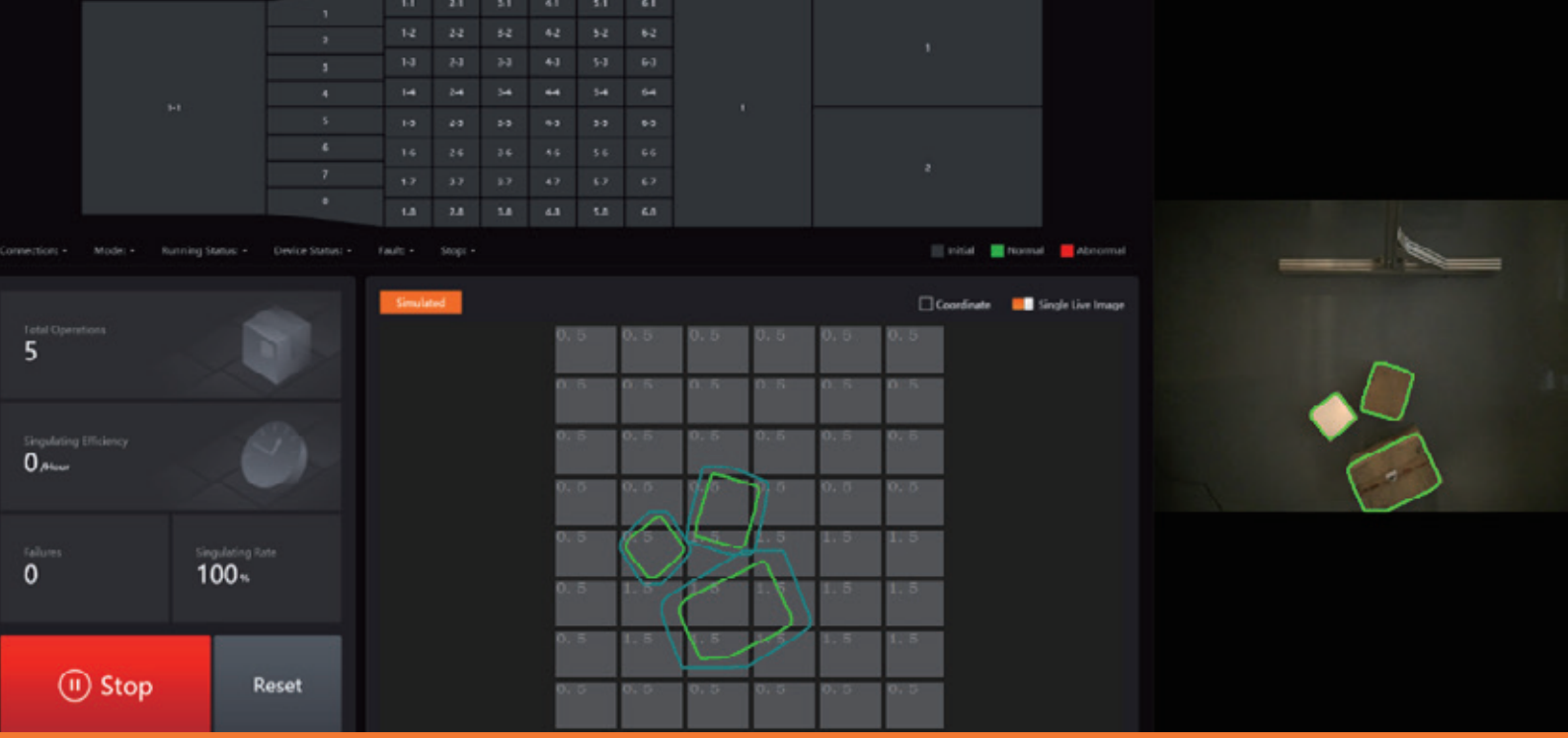
- **Powerful algorithms:** Based on the combination of 2D deep-learning instance segmentation algorithm and 3D image processing algorithm, the system is able to accurately identify and locate all kinds of parcels, including challenging forms such as envelopes, black parcels and sealed bags.
- **Intelligent hardcore:** The RGB-D Smart Camera integrates image processing related algorithms, which calculate parcels' position information inside the camera and output results directly with supreme frame rate.
- **Flexible implementation:** The vision system can be adjusted flexibly according to singulator size. In fact, the only thing needs to be modified is camera's number. The system calibration can be achieved by a single click.
- **Strong robustness:** High performance IPC with independent graphical card is no longer required thanks to the introduction of smart 3D camera with IP65 ingress protection level, which makes the overall system more robust.

Parameters	Hikrobot System	Manual
Max. Efficiency	7000 pph	~2000 pph
Interval Error	±10%	N/A
Singulation Accuracy	99.9%	N/A

Recommended List



Model	Description	Quantity
MV-DB500S-S	RGB-D Smart Camera	2 to 3
iMVS-MV3D-SCS	Dongle for SingulatorControl Client	1
MV-VC3101H-128G60	Vision Controller	1



SingulatorControl Client

Software Introduction

SingulatorControl is the client software of Singulation System, which can be integrated with PLC, servo motors and other external devices for communication control, and the core functions include positioning segmentation and tracking prediction. Positioning segmentation is based on deep learning algorithm, which has excellent effect for dense parcels, black parcels, envelope pieces and same color parcels. The tracking prediction function establishes stable sorting results for all objects through tracking in the time domain, thus reducing the degree of variation in object speed and improving the separation success rate of dense objects, while guaranteeing the uniformity of object speed and the smoothness of the system.

Key Features

- **Intelligent operation:** simplified parameters, enhanced logical relationship between parameters and output results, with intuitive screen display, reducing the difficulty of deployment and debugging
- **Rich functions:** The software comes with SCADA interface, clear system status, rich data statistical functions, support for a variety of data instant display and report export
- **Precise control:** Through precise positioning of parcel position and sensitive control of motor, stable and accurate parcel control can be realized





Empty, Double and Position (EDP) Detection System

Solution

Empty, Double and Position (EDP) Detection System is centered on RGB-D smart cameras. Leveraging self-developed 3D image processing technology and deep learning-based positioning and segmentation algorithms. The system detects parcel quantities and positions. The solution integrates multiple functions, including double-parcel detection, empty detection, position correction, and over-edge detection, making it a comprehensive visual inspection solution suitable for various types of mainstream sorting machines such as cross belts, tilting machines, balance wheels, and narrow belts.

Parameter	Hikrobot Equipment
Algorithm Processing Time	< 150 ms
Empty Detection Accuracy	> 99.9%
Double-Parcel Detection	Missed detection rate < 0.3‰ False detection rate < 2‰
Supported Parcel Type	Carton box, soft package, envelope, woven bag, etc.
Max. Supported Speed	3.5 m/s

Advantages

- **Feature-rich:** The system integrates functions of empty detection, double-parcel detection, position correction, and over-edge detection, offering multiple uses with a high cost-performance ratio.
- **Accurate and reliable:** The system combines 2D deep learning algorithm with 3D image processing algorithm for accurate detection of package quantity and position.
- **Easy to Use:** The system comes with factory-calibrated internal parameters, and it features one-click system calibration on-site, making deployment straightforward.
- **Seamless Compatibility:** With a large field of view, it adapts to various types of sorting machines, including cross-belt and tilting types.

Recommended List

Model	Description	Quantity
MV-DB500S-C	RGB-D Smart Camera	1



Dynamic DWS System



Solution

Hikrobot Dynamic DWS System addresses the difficulties in gathering accurate parcel information in express industry. Composed of self-developed high-resolution smart code reader, line laser 3D camera and dynamic weighing module, the system can gather and integrate in real-time the three basic information of each parcel: barcode, volume, and weight. The dynamic DWS system can be seamlessly integrated into existing sorting equipment in distribution centers, automating the process of data collection and parcel sorting.

Advantages

- **High throughput:** Data is collected dynamically during non-stop transport. The maximum working rhythm reaches up to 5000 pph.
- **Precision:** To ensure data accuracy, the entire data collection and integration process is automated without any human intervention.
- **Labor saving:** It is estimated to save the labor of over 2 people in unloading and sorting section of one line.
- **Real-time alarm:** System halts on error with sound/light alarm for real-time handling if overlong, overweight or unlabeled parcel is detected.
- **Traceability:** Combined data and images are either saved locally or uploaded to pre-defined server to realize parcel information retrieval, reducing errors during transport.
- **High scalability:** The system is compatible with telescopic belt conveyor, swing arms and other sorting equipment. It also works with CCTV system to achieve better visual traceability.

Parameter	Hikrobot Equipment	Manual
Symbologies	Code128, Code39, QR, etc	
Max. operation rate	> 5000 pph	1000 pph
Weighing accuracy	± 40 g	Unwarrantable
Save/upload images	Supported	Not supported
Volume measurement accuracy	± 5 mm	Unwarrantable

Recommended List

Model	Description	Quantity
MV-ID6200M-00C-NNG	20 MP Logistic Code Reader	12
MV-ID7080EM-35F-WHA	8K Line Scan Camera	1
MV-DL2125-04H-R	Line Laser 3D Camera	1
MV-PD010003-12C-8C	Logistics Code Reading Set	1
MV-VC3501H-128G60	Vision Controller	1
MVID-CP	Dongle	1


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Static DWS System

Solution

Static DWS System consists of code reading kit, 3D camera as the core components, integrated with static weighing module, with a large field of view, high accuracy and other characteristics. The system can quickly complete the volume measurement through non-contact measurement, and then match the barcode and weighing data to complete information collection, with objective and accurate data.

Advantages

- **Efficient and objective:** No human interference in the information collection process, objective data, simple and fast operation process, low learning cost
- **Accurate:** Accurate barcode, weight and volume information, stable identification
- **Billing proof:** It can provide data basis for charging by parcel volume

Parameter	Hikrobot Equipment	Manual
Symbologies	Code128,Code39,QR,DM,etc.	
Max. operation rate	30 to 40 pcs/min	15 to 20 pcs/min
Weighing accuracy	± 0.01 kg	Unwarrantable
Save/upload images	Supported	Not supported
Volume measurement accuracy	± 10 mm	Unwarrantable
Max. Cubic Dimensions	800mm x 800mm x 800mm	Not supported

Recommended List

Model	Description	Quantity
MV-IDS012M-16C-C	Logistics Code Reading Set	1
MV-DB500S-V	RGB-D Smart Camera	1
MV-VC3101H-128G60	Vision Controller	1
MVID-CP	Dongle	1





Static DWS System for Large Item

Solution

Static DWS System for Large Item consists of the logistics code reading set, RGB-D smart camera, and matching static scale. Designed for large parcels in the express delivery industry, it features a wide field of view and high precision. With non-contact measurement, it can quickly and accurately complete volume measurement, barcode matching, and object weighing, ensuring that the collected data is objective and precise.

Advantages

- **Efficient and Objective:** The information collection process is free from human interference, ensuring objective data and a simple, quick operation that is easy to learn.
- **Accurate and Error-Free:** Barcode, weight, and volume information are accurate, with stable recognition results.
- **Reasonable Billing:** Provides a data basis for charging by parcel volume.
- **Strong Compatibility:** With an extra-large field of view, it adapts to various parcel shapes, including flat items.

Parameter	Hikrobot Equipment	Manual
Symbologies	Code128, Code39, QR, DM, etc.	
Operation Rate	30 to 40 pcs/min	15 to 20 pcs/min
Weighing Accuracy	± 0.01 kg	Unwarranted
Save/Upload Images	Supported	Not supported
Dimension Measurement Accuracy	± 10 mm	Not supported
Max. Cubic Dimensions	1200 mm × 1200 mm × 1200 mm	Not supported

Recommended List

Model	Description	Quantity
MV-IDS012M-16C-C	Logistics Code Reading Set	1 to 4
MV-DB1300A-V	RGB-D Smart Camera	1
MV-VC3101H-128G60	Vision Controller	1





Six-Sided Code Reading System

Solution

Hikrobot six-sided code reading system is composed of ID6000 series smart code readers and an ID7000 series smart line scan code reader, realizing dynamic code-reading on all faces (top/bottom/left/right/front/back) of the parcel, minimizing the need to adjust the parcel manually.

Advantages

- **Flexible design.**

  Adopt MV-ID6000 intelligent code reader with high acquisition frame rate, it can meet the high-speed application scenes, powerful field of view coverage, providing customers with cost-effective system solutions

  With 8K smart line scan reader, it can meet the diversified needs of customers in high-speed application scenes, and easily complete the setup and debugging. Equipped with bottom reflector for bottom barcode identification; at the same time, automatic cleaning mechanism is optional to solve the problem of difficult maintenance of reflector

  By selecting and equipping an RGB-D smart camera, you can achieve package sortation and double-package detection functions based on deep learning, and combine 3D information to achieve an ultra-high accuracy rate in judging the quantity and type of packages.

- **User-friendly**: The software features simple operation, clear interface and complete functions.
- **Strong robustness:** Independent developed code reading algorithm, strong adaptability to barcode distortion, crease, lamination and other situations, can identify cylindrical parts, slender parts, irregular parts, etc.



Recommended List

Model	Description	Quantity
MV-ID6200M-00C-NNG	20 MP Smart Code Reader	5
MV-ID7080EM-35F-WHA	8K Line Scan Camera	1
MV-DB500S-C	RGB-D Smart Camera	1
Industrial PC	Additional	1
MVID-CP	Dongle	1



Cross-Belt Five-Sided Scanning System

Solution

The cross-belt five-sided scanning system adopts eight smart code readers. A single smart reader can cover the FOV of 740mm×400mm, and the DOF can reach more than 400mm, meeting the requirements of small and medium-sized cross-belt sorting machine for FOV, DOF and parcel spacing.

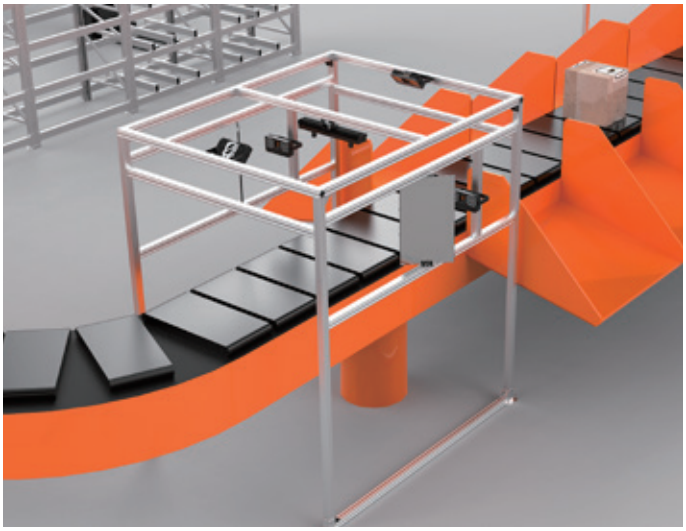
Advantages

- **Linking accuracy:** The smart code reader accurately obtains and integrates data, with no mismatching, over-reading, or other issues.
- **High speed**: The system is adept at high-speed applications and support up to 2.5m/s.
- **Strong scalability:** Support the expansion of the six-sided reading code for the parcels feeding; add EDP, line laser stereo camera to achieve the presence of detection, package correction and other functions.
- **Customized services:** Customizable communication protocols, extended picture saving and data replenishment functions.

Parameter	Hikrobot Equipment
Symbologies	Code128,Code39,QR,DM,etc.
Communication mode	Gigabit Ethernet port
Save/upload images	Supported

Recommended List

Model	Description	Quantity
MV-ID6120PM-00C-NNG	12 MP Smart Code Reader	8
Industrial PC	Additional	1
MVID-CP	Dongle	1





Dynamic Scanning & Positioning System

Solution

With RGB-D Smart Camera and intelligent reader as the core, dnamic scanning & positioning system realizes contour segmentation, independent reading and no read positioning of multiple parcels on the conveyor belt. If no read package appears, the system will record the data of the package and provide visual reminder at the back end to assist manual positioning and supplementary input.

Advantages

- **Parallel processing:** Supports code reading and positioning of multiple packages in the field of vision, and deep learning-based segmentation algorithm effectively avoids misidentification of sticky packages, without regulating package spacing
- **Visualization:** Real-time rendering marks no Read packages and guides manual to quickly select no read packages to supplement the barcode through a back-end display device
- **High expansibility:** Panoramic camera automatic label saving and no read package OCR automatic replenishment function can be extended

Recommended List

Model	Description	Quantity
MV-DB500S-S	RGB-D Smart Camera	1
MV-ID6200M-00C-NNG	20 MP Smart Code Reader	1
MV-PD010003-12C-8C	12 MP Logistics Code Reading Set	1
MV-VC3502H-128G60	Vision Sensor	1





Dynamic Scanning System

Solution

Dynamic scanning system, using Hikrobot ID series smart code reader with vision controller solution, to achieve parallel scanning of large quantities of parcels and save the parcel label. the maximum number of scanned items per hour can exceed 10,000. A set of equipment can replace multiple manual scanning stations.

Recommended List

Model	Description	Quantity
MV-IDS012M-16C-C	Logistics Code Reading Set	1
MV-VC2140	Vision Sensor	1

Advantages

- **Efficient and stable:** Simultaneous reading of multiple barcodes on different packages is supported.
- **Cost-effective:** The number of labor is significantly reduced, leading to high ROI.

Parameter	Hikrobot Equipment	Manual
Symbologies	Code128, Code39,QR,DM,etc.	
Max. operation rate	Over 10000 pcs/hour	1800 pcs/hour/person
Save/upload images	Supported	Not supported





Parcel Tracking & Mis-Sorting Detection System

Solution

The Parcel Tracking & Mis-Sorting Detection System, with embedded smart cameras at its core and based on deep learning algorithms, performs real-time detection of package sorting actions in cross belts or other sorting scenarios. It matches the sorting actions with the sorting system's instructions to determine if the package has been sorted correctly. Additionally, the cameras enable video linkage from the package feeding to the sorting process, achieving traceability during the whole process. This system effectively addresses mis-sorting and loss of package due to various reasons, ensuring the safety of packages, preventing property loss, and improving the efficiency of package delivery.

Advantages

- **Efficient and Stable:** The system runs stably at high frame rate, suitable for high-speed sorting scenarios.
- **Accurate Detection:** The system significantly reduces mis-sorted packages caused by factors such as drifting and hanging, effectively alleviating mis-sorting issues.

Parameter	Hikrobot Equipment	Manual
Applicable Parcels	Envelopes, cartons, and bags	
Mis-Sorting Rate	< 0.02%	> 0.1%
Save Images/Videos	Supported	Not supported

Recommended List

Model	Description	Quantity
MV-SC3000	SC Series Smart Camera	1
MV-VC3701	Vision Controller	1





Parcel Sorting System

Solution

The parcel sorting system is a visual detection system designed for the sorting scenarios in the express and logistics industry. It employs deep learning methods combined with depth information to accurately categorize parcels based on their shape, texture, and other characteristics. The system can classify various categories, including but not limited to cartons, small packages, foam boxes, and irregular items. Additionally, it can perform stack detection and parcel spacing detection, providing more data to optimize parcel sorting and helping sorting centers improve efficiency and reduce costs.

Parameter	Hikrobot Equipment
Algorithm Processing Time	< 150 ms
Sortation Accuracy	> 99.5%
Stacked Item Detection Accuracy	Missed detection rate < 0.3‰ False detection rate < 2‰
Supported Parcel Shape	Cardboard Box, soft package, envelope, irregular item, foam box, woven bag, etc.
Max. Supported Speed	2.5 m/s

Advantages

- **Feature-Rich:** Offers a wide range of types and supports the expansion of more types, suitable for various business scenario requirements.
- **Precise and Reliable:** Combines with 2D deep learning algorithms and 3D image processing algorithms to accurately determine parcel types and stacking conditions.
- **Flexible Compatibility:** Supports integration into the six-sided code reading system, merging classification results with DWS data to help users make deeper business logic judgments.

Recommended List

Model	Description	Quantity
MV-DB500S-C	RGB-D Smart Camera	1





Logistics Code Reading Gate

Solution

In the logistics process of palletizing and inspection, scanning and recognizing entire pallets of materials is necessary. To address the challenges of low efficiency, poor quality, and high labor costs, Hikrobot has developed a logistics code reading gate, which is designed to integrate with the user's ERP/iWMS system via the HIK-RMS management platform.

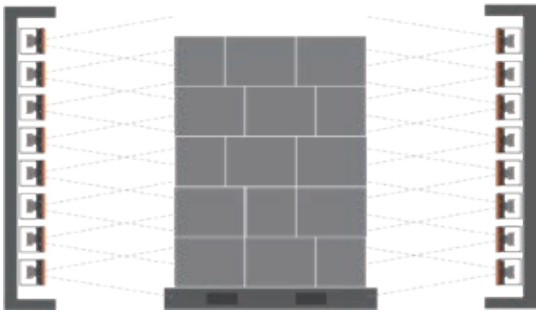
Advantages

- **High operation efficiency:** The system completes the identification with a simple setup during the transportation process.
- **Low hardware cost:** Two rows of cameras dynamically recognize and stitch images, optimizing the number of cameras for the best layout.
- **Intelligent feedback:** Deep learning for waybill localization combined with image stitching technology restores the entire stack image, highlighting normally recognized and missed labels with frames of different colors for easy and quick data entry.

Solution	Cost	Integration Complexity	Occupied Space	Scanning Time	Duration of Continuous Work	Actual Effect
Manual Scanning with PDA	Low	Low	Small	3 to 5 minutes per pallet	Manual labor requires shift work	High risk of missed scans and high rework costs.
RFID	High	Low	Medium	5 to 10 seconds per pallet	Around-the-clock work	Prone to interference, unable to determine missed readings.
Logistics Code Reading Gate	Medium	Low	Small	5 to 10 seconds per pallet	Around-the-clock work	High recognition rate, with code supplementation for missed readings.



Recommended List



Model	Description	Quantity
MV-ID6120PM-HVS	12 MP Logistics Code Reading Camera	2 to 10
MV-ID6200M-HVS	20 MP Logistics Code Reading Camera	2 to 10

RGB-D Smart Camera

Key Features



- In-built deep learning instance segmentation algorithms combining with 3D processing algorithm, generating more accurate location result
- Support wide field of view and high frame rate, applicable to the logistics industry.
- Support simultaneous output of RGB and depth image, and multi-camera system calibration by single click
- Laser module with high energy efficiency provide more stable performance and wider dynamic range, realizing accurate exposure synchronisation
- Equipped with narrow band filter with better anti-interferrence capability
- GigE based configuration ensures stable data transmission

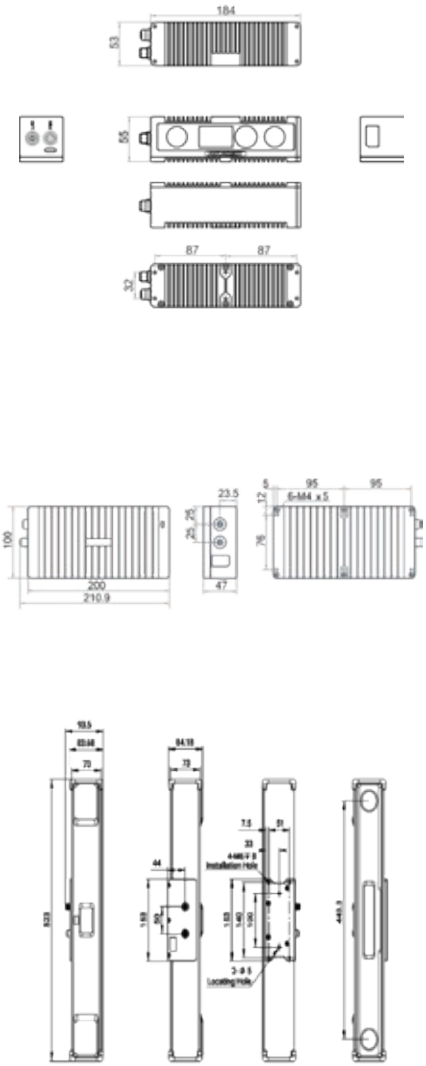
Specifications

Parameter \ Model	MV-DB500S-S	MV-DB500S-C	MV-DB500S-V
Near FOV	580mm×470mm	580mm×470mm	580mm×470mm
Far FOV	2500mm×1800mm	2500mm×1800mm	2400mm×1800mm
Clearance Distance(CD)	500mm	500mm	500mm
Measurement Range(MR)	1500mm	1500mm	1500mm
Accuracy	Depth Image: X,Y:5mm@1m;10mm@2m Z:4mm@1m;8mm@2m RGB Image: X,Y:2.6mm@1m;5.5mm@2m	Depth Image: X,Y:5mm@1m;10mm@2m Z:4mm@1m;8mm@2m RGB Image: X,Y:2.6mm@1m;5.5mm@2m	Depth Image: X,Y:5mm@1m;10mm@2m Z:4mm@1m;8mm@2m RGB Image: X,Y:2.6mm@1m;5.5mm@2m
Output Frame Rate	30fps@Singulation Mode	20fps@EDP Mode	8fps@Measuring mode
Data Format	Original image(mono and color images), depth image,package posture information	Original image(mono and color images), depth image,EDP detection result	Original image(mono and color images), depth image,volume data
Interface	Gigabit Ethernet(1000Mbit/s)		
I/O	12-pin M12 interface provides I/O, including opto-isolated input × 3 , opto-isolated output × 3		
Power Consumption	6.76W@24VDC	6.76W@24VDC	9W@24VDC
Dimension	184 mm × 55 mm × 53 mm		200mm×47mm×100mm
Weight	Approx.700g		Approx.1kg
Temperature/Humidity	Working temperature 0~45°C, storage temperature -30~80°C, 20%~85%RH without condensation		

Parameter \ Model	MV-DB700S-S	MV-DB700S-C	MV-DB1300A-V
Near FOV	590 mm × 470 mm	590 mm × 470 mm	1350mm×1200mm
Far FOV	2200 mm × 1500 mm	2200 mm × 1500 mm	3650mm×2750mm
Clearance Distance(CD)	300 mm	300 mm	1200mm
Measurement Range(MR)	700 mm	700 mm	1800mm

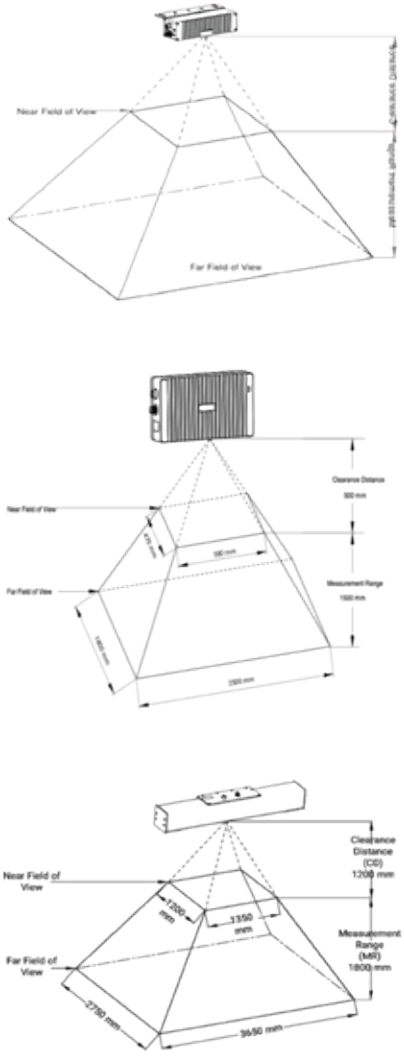
Parameter \ Model	MV-DB700S-S	MV-DB700S-C	MV-DB1300A-V
Accuracy	Depth Image:X,Y:5mm@1m Z:2.5 mm@0.5 m; 5 mm@1 m RGB Image:X,Y:2.6mm@1m	Depth Image:X,Y:5mm@1m Z:2.5 mm@0.5 m; 5 mm@1 m RGB Image:X,Y:2.6mm@1m	Depth Image:X,Y:5mm@1.2m; 9mm@2m;14mm@3m Z:1mm@1.2m; 2mm@2m; 3mm@3m RGB Image:X,Y:3mm@1.2m; 4.6mm@2m;6.7mm@3m
Output Frame Rate	30 fps@singulation mode	30 fps@EDP mode	1fps@Measuring mode
Data Format	Original image(mono and color images), depth image, object posture information	Original image(mono and color images), depth image, EDP detection result	Original image(mono and color images), depth image,volume data
Interface	Gigabit Ethernet(1000Mbit/s)		
I/O	12-pin M12 interface provides I/O, including opto-isolated input × 3 , opto-isolated output × 3		
Power Consumption	9W@24 VDC	9W@24 VDC	7W@24VDC
Dimension	184 mm × 55 mm × 53 mm		522mm×82.8mm×83.1mm
Weight	Approx.700g		Approx.2.5kg
Temperature/Humidity	Working temperature 0~45°C, storage temperature -30~80°C, 20%~85%RH without condensation		

Dimension



unit: mm

Measurement Range Diagram



unit: mm

Smart Camera

SC2000E Series Vision Sensor

Key Features



- Adopts embedded hardware platform for high-speed image processing.
- Adopts built-in positioning and measurement algorithms to for counting, existence, measurement detection, and recognition.
- Multiple IO interfaces for input and output signals.
- Multiple indicators for displaying device status.
- Adopts light source to ensure uniform brightness in the illuminated area.
- Supports multiple communication protocols, including RS-232, TCP, UDP, FTP, Profinet, Modbus, Ethernet/IP, etc.

Specifications

Paramete / Model	MV-SC2004EM-06S-WBN-Mini	MV-SC2016EM-06S-WBN-Mini
Vision tool	Count: Spot count , edge count, pattern count, and contour count Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, and contour existence Location: Fixture Logic tool: Condition judge, character comparison, logic judge, and calculator Measurement: L2L angle, diameter measurement, brightness average value, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, and edge width measurement Recognition: OCR and classification registration	Count: Spot count , edge count, and pattern count Existence: Circle existence, line existence, spot existence, edge existence, and pattern existence Location: Fixture Logic tool: Condition judge, character comparison, logic judge, and calculator Measurement: L2L angle, diameter measurement, brightness average value, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, and edge width measurement Recognition: OCR and classification registration
Solution capacity	Supports solution importing and exporting, up to 8 solutions and 40 modules can be stored.	
Communication protocol	RS-232, TCP, UDP, FTP, PROFINET, ModBus, EtherNet/IP, MELSEC/SLMP, FINS, Keyence KV	RS-232, TCP, UDP, FTP, PROFINET, Modbus, EtherNet/IP
Sensor type	CMOS, global shutter	
Pixel size	6.9 μm × 6.9 μm	3.45 μm × 3.45 μm
Sensor size	1/2.9"	
Resolution	704 × 540	1408 × 1024
Max. frame rate	60 fps	
Dynamic range	74 dB	71.4 dB
SNR	41 dB	
Gain	0 dB ~ 15 dB	
Exposure time	16 μs~1 sec	
Pixel format	Mono 8	Mono 8
Mono/color	Mono	Mono
Data interface	Fast Ethernet(100Mbit/s)	
Digital I/O	17-pin M12 connector provides power, Ethernet, serial port, and digital I/O, including non-isolated input × 1(Line 2), non-isolated output × 1(Line 3), configurable non-isolated I/O × 2(Line 0/1), RS-232 × 1, and external button input × 1(BUTTON) Output signals support NPN only.	
Power supply	12 VDC ~ 24 VDC	

Paramete / Model	MV-SC2004EM-06S-WBN-Mini	MV-SC2016EM-06S-WBN-Mini
Max. power consumption	11 W@24 VDC	
Lens mount	M10-mount, adjusting focus manually supported	
Focal length	6.72 mm	
Lens cap	Transparent lens cap	
Light source	White LED lamp × 4	
Indicator	Power indicator(PWR), network indicator(LNK), and status indicator(STS)	
Dimension	46 mm × 38 mm × 25 mm	
Weight	Approx. 160 g(0.4 lb.)	
Ingress protection	IP65	
Temperature	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F)	
Humidity	20% RH to 95% RH(no condensation)	
Client software	SCMVS	
Certification	CE,KC	

Paramete / Model	MV-SC2004EC	MV-SC2016EM	MV-SC2016EC	MV-SC2004EM
Vision tool	Count: Spot count , edge count, pattern count, and contour count Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, and contour existence Location: Fixture Logic tool: Condition judge, logic judge, character comparison, calculator, and combination judge Measurement: L2L angle, diameter measurement, brightness average value, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement, and color size Recognition: OCR, classification registration, color contrast, and color recognition	Count: Spot count , edge count, pattern count, and contour count Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, and contour existence Location: Fixture Logic tool: Condition judge, logic judge, character comparison, calculator, and combination judge Measurement: L2L angle, diameter measurement, brightness average value, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, and edge width measurement Recognition: OCR and classification registration	Count: Spot count , edge count, pattern count, and contour count Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, and contour existence Location: Fixture Logic tool: Condition judge, logic judge, character comparison, calculator, and combination judge Measurement: L2L angle, diameter measurement, brightness average value, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement, and color size Recognition: OCR, classification registration, color contrast, and color recognition	Count: Spot count , edge count, pattern count, and contour count Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, and contour existence Location: Fixture Logic tool: Condition judge, logic judge, character comparison, calculator, and combination judge Measurement: L2L angle, diameter measurement, brightness average value, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, and edge width measurement Recognition: OCR and classification registration
Solution capacity	Supports solution importing and exporting, up to 8 solutions and 40 modules can be stored.			
Communication protocol	RS-232, TCP, UDP, FTP, PROFINET, Modbus, EtherNet/IP			
Sensor type	CMOS, global shutter			
Pixel size	6.9 μm × 6.9 μm	3.45 μm × 3.45 μm		6.9 μm × 6.9 μm
Sensor size	1/2.9"			
Resolution	704 × 540	1408 × 1024		704 × 540
Max. frame rate	60 fps			
Dynamic range	74 dB	71.4 dB		74 dB
SNR	41 dB			
Gain	0 dB ~ 15 dB			
Exposure time	16 μs~1 sec			
Pixel format	Mono 8,RGB 8	Mono 8	Mono 8,RGB 8	Mono 8
Mono/color	Color	Mono	Color	Mono
Data interface	Fast Ethernet(100Mbit/s)			
Digital I/O	17-pin M12 connector provides power, Ethernet, serial port, and digital I/O, including non-isolated input × 1(Line 2), non-isolated output × 1(Line 3), configurable non-isolated I/O × 2(Line 0/1), and RS-232 × 1			17-pin M12 connector provides power, Ethernet, serial port, and digital I/O, including non-isolated input × 1(Line 2), non-isolated output × 1(Line 3), configurable non-isolated I/O × 2(Line 0/1), and RS-232 × 1
Power supply	12 VDC ~ 24 VDC			

Paramete / Model	MV-SC2004EC	MV-SC2016EM	MV-SC2016EC	MV-SC2004EM
Max. power consumption	22 W@24VDC			
Lens mount	M12-mount, adjusting focus manually supported			
Focal length	8/12.4/14.8mm			
Lens cap	Transparent lens cap			
Light source	White LED lamp			
Indicator	Power indicator(PWR), network indicator(LNK), and status indicator(STS)			
Dimension	46 mm × 57.6 mm × 25 mm			
Weight	Approx. 220 g(0.5 lb.)			
Ingress protection	IP65			
Temperature	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F)			
Humidity	20% RH to 95% RH(no condensation)			
Client software	SCMVS			
Certification	CE,KC			

Dimension



unit: mm

SC3000 Series Vision Sensor

Key Features



- Adopts embedded hardware platform for high-speed image processing.
- Built-in high-precision positioning, measurement and recognition algorithms for counting, defects, existence, positioning and other functions.
- Multiple IO interfaces for input and output signals.
- Supports viewing the device's status in real time via 360° visual indicator, convenient for debugging and maintenance.
- Rotatable cable tail design, suitable for narrow space.
- Adopts polarized, diffused, and full-transparent multiple optical lighting with good environmental adaptability.
- IP67 protection without fear of harsh industrial application environments.
- Supports multiple communication protocols, including RS-232, TCP, UDP, FTP, Profinet, Modbus, and EtherNet/IP.

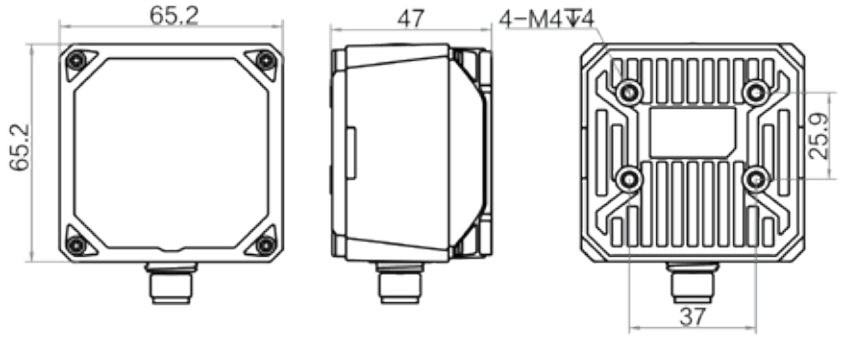
Specifications

Series	SC3000 Series		
Parameter \ Model	MV-SC3016M	MV-SC3016C	MV-SC3050M
Vision tool	Count: Spot count, edge count, pattern count, contour count, color count Defect detection: Exception detection Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, contour existence Location: Match calibration, match location, position fixture Logic tool: If module, condition judge, logic judge, combination judge, string comparison, calculator Measurement: L2L angle, diameter measurement, brightness analysis, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement Recognition: OCR, code recognition, classification registration, object detection registration Deep learning: DL object detection, DL classification	Count: Spot count, edge count, pattern count, contour count, color count Defect detection: Exception detection Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, contour existence Location: Match calibration, match location, position fixture Logic tool: If module, condition judge, logic judge, combination judge, string comparison, calculator Measurement: Color size, L2L angle, diameter measurement, brightness analysis, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement Recognition: OCR, code recognition, color contrast, color recognition, classification registration, object detection registration Deep learning: DL object detection, DL classification	Count: Spot count, edge count, pattern count, contour count Defect detection: Exception detection Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, contour existence Location: Match calibration, match location, position fixture Logic tool: If module, condition judge, logic judge, combination judge, string comparison, calculator Measurement: L2L angle, diameter measurement, brightness analysis, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement Recognition: OCR, code recognition, classification registration, object detection registration Deep learning: DL object detection, DL classification
Solution capacity	Supports solution importing and exporting, up to 32 solutions can be stored.		
Communication protocol	RS-232, TCP, UDP, FTP, PROFINET, Modbus, EtherNet/IP, MELSEC/SLMP, FINS, Keyence KV		
Sensor type	CMOS, global shutter		
Pixel size	3.45 μm × 3.45 μm	3.45 μm × 3.45 μm	3.2 μm × 3.2 μm
Sensor size	1/2.9"	1/2.9"	1/1.7"
Resolution	1408 × 1024	1408 × 1024	2368 × 1760
Max. frame rate	60 fps	60 fps	30 fps
Dynamic range	71.4 dB		
SNR	41 dB		
Gain	0 dB~15 dB		
Exposure time	16 μs~1 sec	16 μs ~ 1 sec	60 μs ~ 1 sec
Pixel format	Mono 8	RGB 8,Mono 8	Mono 8
Mono/color	Mono	Color	Mono
Data interface	Fast Ethernet(100Mbit/s)		
Digital I/O	17-pin M12 connector provides power, Ethernet, digital I/O, and serial port: Input signal × 2(Line 0/1), output signal × 3(Line 5/6/7), bi-directional I/O × 3(Line 2/3/4), and external button input × 1. Output signal can be set as NPN or PNP.		
Power supply	24 VDC		
Max. power consumption	48 W@24 VDC		
Lens mount	M12-mount, mechanical autofocus lens		
Focal length	6/12.4/14.8 mm	6/12.4/14.8 mm	8/12.4/16 mm
Lens cap	Transparent lens cap. Polarization or infrared filter lens cap is optional.		
Light source	14 LEDs, white light by default. Red or blue is optional.		
Indicator	Power indicator(PWR), network indicator(LNK), status indicator(STS), result indicator(OK/NG)		
Dimension	65.2 mm × 65.2 mm × 47 mm		
Weight	Approx. 280 g(0.6 lb.)		
Ingress protection	IP67(under proper installation of lens and wiring)		
Temperature	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F)		
Humidity	20% RH to 95% RH(no condensation)		
Client software	SCMVS		
Certification	CE,KC	CE,FCC,KC	CE,FCC,KC

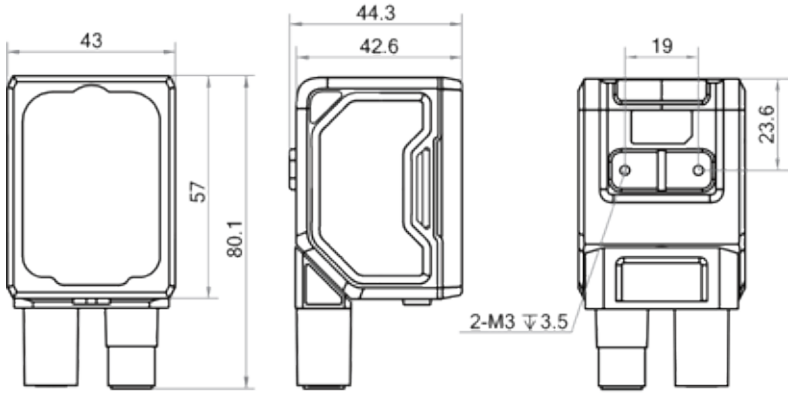
Series	SC3000X Series		
Parameter \ Model	MV-SC3013XM	MV-SC3013XC	MV-SC3030XM
Vision tool	Count: Spot count, edge count, pattern count, contour count Defect detection: Exception detection Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, contour existence Location: Match calibration, match location, position fixture Logic tool: If module, condition judge, logic judge, combination judge, string comparison, calculator Measurement: L2L angle, diameter measurement, brightness analysis, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement Recognition: OCR, code recognition, classification registration, object detection registration Deep learning: DL object detection, DL classification	Count: Spot count, edge count, pattern count, contour count, color count Defect detection: Exception detection Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, contour existence Location: Match calibration, match location, position fixture Logic tool: If module, condition judge, logic judge, combination judge, string comparison, calculator Measurement: Color size, L2L angle, diameter measurement, brightness analysis, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement Recognition: OCR, code recognition, color contrast, color recognition, classification registration, object detection registration Deep learning: DL object detection, DL classification	Count: Spot count, edge count, pattern count, contour count Defect detection: Exception detection Existence: Circle existence, line existence, spot existence, edge existence, pattern existence, contour existence Location: Match calibration, match location, position fixture Logic tool: If module, condition judge, logic judge, combination judge, string comparison, calculator Measurement: L2L angle, diameter measurement, brightness analysis, contrast measurement, width measurement, P2L measurement, greyscale size, line angle, edge width measurement Recognition: OCR, code recognition, classification registration, object detection registration Deep learning: DL object detection, DL classification
Solution capacity	Supports importing and exporting project, up to 32 projects can be stored.		
Communication protocol	RS-232, TCP, UDP, FTP, PROFINET, Modbus, EtherNet/IP, MELSEC/SLMP, FINS, Keyence KV		
Sensor type	CMOS, global shutter		
Pixel size	6.9 μm × 6.9 μm	6.9 μm × 6.9 μm	3.45 μm × 3.45 μm
Sensor size	1/1.45"	1/1.45"	1/1.8"
Resolution	1216 × 1024	1216 × 1024	2048 × 1536
Max. frame rate	60 fps	60 fps	40 fps
Dynamic range	77.8 dB		
SNR	43 dB		
Gain	0 dB~15 dB		
Exposure time	6 μs ~ 1 sec		
Pixel format	Mono 8	RGB 8,Mono 8	Mono 8
Mono/color	Mono	Color	Mono
Data interface	Fast Ethernet(100Mbit/s)		
Digital I/O	12-pin M12 connector provides power and I/O, including opto-isolated input(LINE 0/1/2) × 3, opto-isolated output(LINE 3/4/5) × 3, and RS-232 × 1 Supports triggering device via pressing top trigger button		
Power supply	24 VDC		
Max. power consumption	6.5 W@24 VDC		
Lens mount	M12-mount, mechanical autofocus supported		
Focal length	6/12.4/14.8 mm	6/12.4/14.8 mm	6/12.4/14.8 mm
Lens cap	Polarized + diffused + full-transparent lens cap		
Light source	White spot light source. Red/blue/IR point light source is optional		
Aiming system	Orange LED		
Indicator	360° visual indicator		
Dimension	Straight angle: 80.1 mm × 43 mm × 44.3 mm(3.2" × 1.7" × 1.7") Right angle: 58.5 mm × 43 mm × 65.4 mm(2.3" × 1.7" × 2.6")		
Weight	Approx. 190 g(0.4 lb.)		
Ingress protection	IP67(under proper installation of waterproof lens cap)		
Temperature	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: -30 °C to 70 °C(-22 °F to 158 °F)		
Humidity	20% to 95% RH, non-condensing		
Client software	SCMVS		
Certification	CE,KC		

Dimension

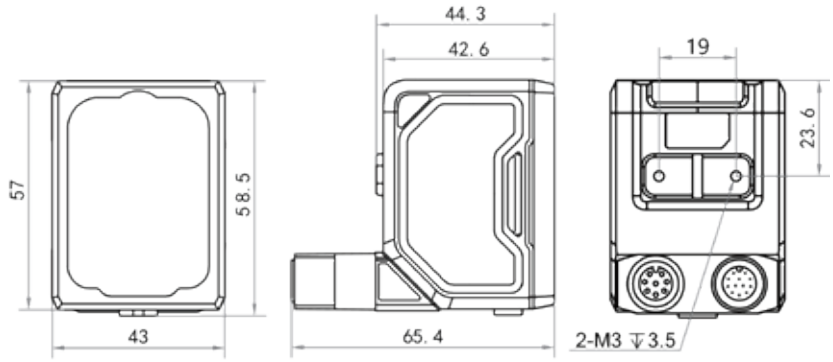
SC3000



SC3000X



Straight angle



Right angle

Unit:mm

SC6000 Series Smart Camera

Key Features



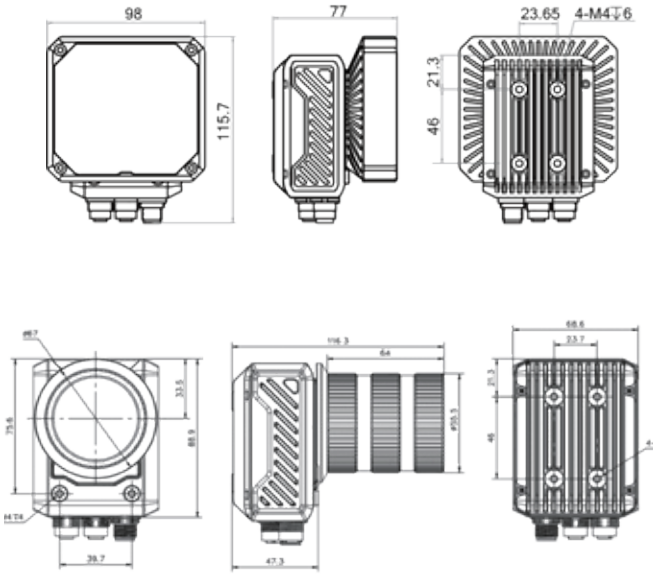
- Adopts AI deep learning algorithm to achieve OCR, object recognition, defect detection, etc.
- Integrates VM functions and supports more than 140 algorithms.
- Supports four-color light source(red/green/blue/white), and switching as needed.
- Adopts multiple I/O interfaces, such as multiple input/output signals.
- Supports multiple communication protocols.
- Supports indicators displaying device status for easy debugging and maintenance.
- Supports ingress protection IP67.

Specifications

Model / Paramete	MV-SC6016M	MV-SC6016C	MV-SC6050M
Function module	VM Platform		
Communication protocol	TCP, UDP, ModBus, Serial Port, Profinet, EtherNet/IP, Fins, MC, FTP, etc.		
Sensor type	CMOS, global shutter		
Pixel size	3.45 μm×3.45 μm		
Sensor size	1/2.53"		1/1.45"
Resolution	1408 × 1204		2432 × 2048
Max. frame rate	120 fps		80 fps
Gain	0 dB ~ 15 dB		0 dB ~ 18 dB
Exposure time	25 μs~30000 μs		16 μs ~ 1 sec
Pixel format	Mono 8	Mono8,RGB8	Mono 8
Mono/color	Mono	Color	Mono
Memory	8 GB		
Storage	64 GB		
Data interface	Gigabit Ethernet(1000Mbit/s)		
Digital I/O	17-pin M12 male connector provides power and I/O, providing opto-isolated input × 2(Line 0/1), opto-isolated output × 2(Line 4/5), configurable non-isolated input/output × 2(Line 2/3), RS-232 × 1, light source output(max. 30 W) × 1		
Extended interface	17-pin M12 female connector provides VGA × 1 and USB host × 1		
Power supply	24 VDC		
Power consumption	Approx. 12 W @ 24 VDC(without external light source) Approx. 42 W @ 24 VDC(with external light source) Approx. 16.6 W @ 24 VDC(light source is enabled)		
Lens mount	M12-mount, mechanical focus		
Focal length	6/12/16 mm		8/12/16 mm
Lens cap	Red light, green light, blue light, white light(switching by software)		
Light source	Power indicator(PWR), network indicator(LNK), status indictor(STS), and user-defined indicator(U1/U2)		
Dimension	77 mm × 98 mm × 115.7 mm		
Weight	Approx. 750 g(1.7 lb.)		
Ingress protection	IP67(under proper installation of waterproof lens cap)		
Temperature	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F)		
Humidity	20% RH to 95% RH(no condensation)		
Certification	CE,KC		

Model / Paramete	MV-SC6016M-00C-NNN/V2	MV-SC6016C-00C-NNN/V2	MV-SC6050M-00C-NNN/V2
Function module	VM Platform		
Communication protocol	TCP, UDP, ModBus, Serial Port, Profinet, EtherNet/IP, Fins, MC, FTP, etc.		
Sensor type	CMOS, global shutter		
Pixel size	3.45 μm×3.45 μm		
Sensor size	1/2.53"		1/1.45"
Resolution	1408 × 1024		2432 × 2048
Max. frame rate	120 fps		80 fps
Gain	0 dB ~ 15 dB		0 dB ~ 18 dB
Exposure time	16 μs ~ 1 sec		
Pixel format	Mono 8	Mono 8,RGB 8	Mono 8
Mono/color	Mono	Color	Mono
Memory	8 GB		
Storage	64 GB		
Data interface	Gigabit Ethernet(1000Mbit/s)		
Digital I/O	17-pin M12 male connector provides power and I/O, providing opto-isolated input × 2(Line 0/1), opto-isolated output × 2(Line 4/5), configurable non-isolated input/output × 2(Line 2/3), RS-232 × 1, light source output(max. 30 W) × 1		
Extended interface	17-pin M12 female connector provides VGA × 1 and USB host × 1		
Power supply	24 VDC		
Power consumption	Approx. 12 W @ 24 VDC(without external light source) Approx. 42 W @ 24 VDC(with external light source)		Approx. 12.5 W @ 24 VDC(without external light source) Approx. 42.5 W @ 24 VDC(with external light source)
Lens mount	C-Mount		
Focal length	Transparent lens cap		
Lens cap	Not included		
Light source	Power indicator(PWR), network indicator(LNK), status indictor(STS), and user-defined indicator(U1/U2)		
Dimension	116.3mm × 68.6mm × 101.8mm		
Weight	Approx. 530 g(1.2 lb.)		
Ingress protection	IP67(under proper installation of waterproof lens cap)		
Temperature	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F)		
Humidity	20% RH to 95% RH, no condensation		
Certification	CE,KC		

Dimension



Unit:mm

Smart Code Reader

ID6000 Series Smart Code Reader

Key Features

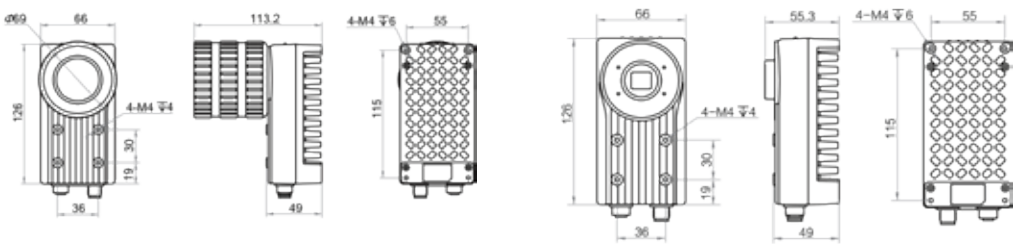


- Provide 20MP ultra-high resolution specifications, covering a large field of view
- Provides 12MP high-resolution global shutter specification adapted to high-speed scenes and provides 4K horizontal resolution
- Provide logistics-specific deep learning algorithms that can deal with various types of distortion, wrinkles, dirty, and damaged barcodes in logistics scenarios
- Support multiple barcode recognition and waybill picking
- Gigabit transmission, support original image output and archive
- Support reader clustering/networking, complete multi-code reader system construction through Codemaster

Specifications

Model / Paramete	MV-ID6120PM-00C-NNG	MV-ID6200M-00C-NNG	MV-ID6200EM-00C-NNG
Symbologies	1D codes: Code 39, Code 128, Code 93, ITF 14, ITF 25, CodaBar, EAN 8, EAN 13, UPCA, UPCE 2D codes: QR Code, Data Matrix		
Max. frame rate	28fps	20fps	10fps
Max. reading speed	84 codes/sec	60 codes/sec	30 codes/sec
Pixel size	3.45μm×3.45μm	2.4μm×2.4μm	2.4μm×2.4μm
Sensor size		1"	
Resolution	4096×3072	5440×3648	5440×3648
Communication protocol	SmartSDK,TCP Client,Serial,FTP,TCP Server		
Data interface	Gigabit Ethernet(1000Mbit/s)		
Digital I/O	12-pin M12 connector provides power and I/O, including opto-isolated input(LineIn 0/1/2) × 3, opto-isolated output(LineOut 3/4/5) × 3, and RS-232 × 1		
Power supply	12 - 24VDC		
Max. power consumption	<12W@24VDC		
Lens mount	C-Mount		
Light source/Lens cap	Not included, Included		
Dimension	126mm×66mm×113.2mm		126mm×66mm×55.3mm
Weight	Approx. 750 g(1.7 lb.)		≈550g
Ingress protection	IP67(under proper installation of waterproof lens cap)		
Temperature/Humidity	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: -30 °C to 70 °C(-22 °F to 158 °F) 20% to 95% RH, without condensation		
Client software	IDMVS	IDMVS	IDMVS

Dimension



Unit:mm

ID7000 Series Smart Code Reader

Key Features

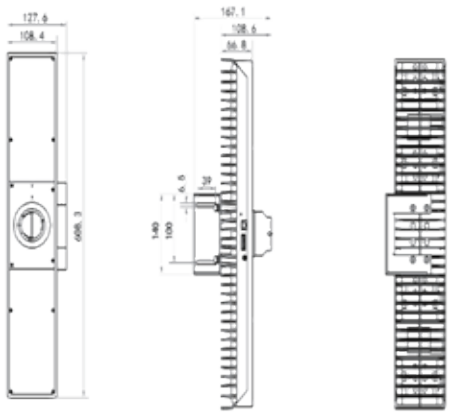


- Use 8K Sensor to achieve 1.2m wide coverage in narrow visual space
- Embedded deep learning code-reading algorithm efficiently reads multiple types of code
- Support real-time varialbe speed stitching, support the entire picture transmission
- Integrated double-sided 36LED wide-angle coverage, uniform illumination, high light source utilization
- Rich IO interface provide access for mutiple input and output signals, support encoder and RS232 serial port transmission protocol
- Optional bottom mirror for use, easy to adjust and maintain, optional mirror cleaning mechanism

Specifications

Model / Paramete	MV-ID7080EM-35F-WHA
Symbologies	1D codes: Code 39, Code 93, Code 128, CodaBar, EAN8, EAN13, ITF25, ITF14, UPCA, UPCE 2D codes: QR Code, Data Matrix Stacked barcode: PDF417
Max. line frequency	15kHz
Resolution	8K
Focal length	35mm
Best working distance	1000mm
Field of view(range)	1000mm@10mil
Communication protocol	SmartSDK, TCP Client, TCP Server, Serial, FTP
Data interface	Gigabit Ethernet(1000Mbit/s)
Digital I/O	10-pin green terminal provides I/O, including differential input(LineIn 0) × 1, opto-isolated input(LineIn 1) × 1, opto-isolated output(LineOut 3/4) × 2, and RS-232 × 1.
Power supply	48VDC
Max. power consumption	180W@48VDC
Lens mount	F-mount, flange back focal length 46.5 mm
Dimension	608.3mm×127.6mm×167.1mm
Weight	Approx. 5 kg(11 lb.)
Temperature/Humidity	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F) 20% RH to 95% RH, non-condensing
Client software	IDMVS

Dimension



Unit:mm

IDH Handheld Code Reader

Key Features

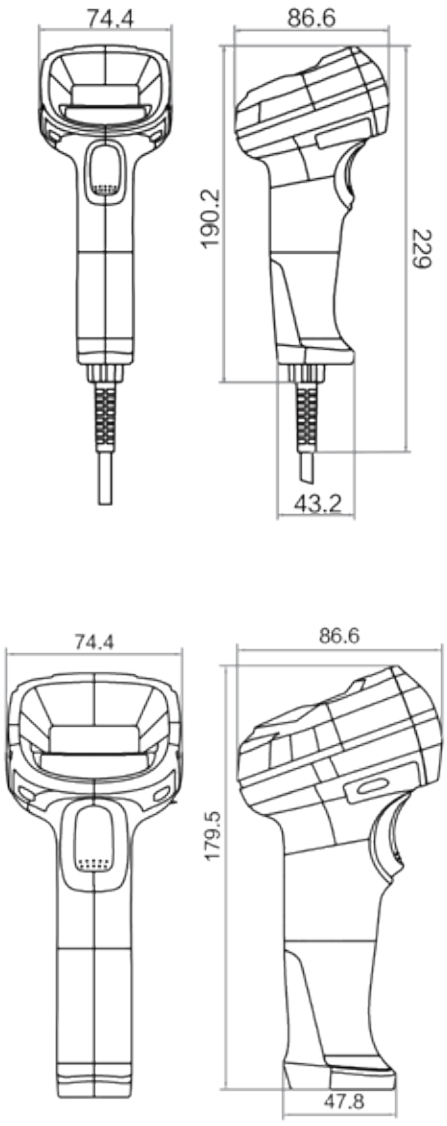


- Adopt self-developed high-performance barcode recognition algorithm, which can efficiently read 1D and 2D codes in industrial scenarios
- Algorithm robustness, it can effectively deal with barcode dirty, defective, low contrast and other situations
- Support continuous code reading and batch code reading modes, greatly improving the reading efficiency of multi-code scenarios
- Support TCP, Serial, FTP, UDP, USB HID, USB CDC and other transmission protocols
- The appearance of the wire separation design, easy to replace the use
- Adopts Bluetooth 5.0 wireless technology to provide convenient and efficient operations.

Specifications

Series	IDH3000 Series Wired Handheld Reader		IDH3000 Series wireless Handheld Reader	
Model / Paramete	MV-IDH3000/13SR/05RN/U	MV-IDH3000/13SR/05RN/L	MV-IDH3000B/13SR/05RN/US	MV-IDH3000B/13SR/05RN/LS
Symbologies	1D codes: Code 39, Code 93, Code 128, CodaBar, EAN8, EAN13, ITF25, ITF14, UPCA, UPCE 2D codes: QR Code, Data Matrix, MicroQR, AZTEC Stacked barcode: PDF417		1D codes: Code 39, Code 93, Code 128, CodaBar, EAN 8, EAN 13, ITF 25, ITF 14, UPCA, and UPCE 2D codes: QR Code, Data Matrix	
Min. accuracy	4mil		4mil	
Max. frame rate	50fps		50fps	
Resolution	1280×1024		1280×1024	
Depth of field	Code 39(5 mil):40 ~ 160 mm Code 128(10 mil):10 ~ 400 mm Data Matrix(10 mil):30 ~ 200 mm QR Code(15 mil):15 ~ 280 mm QR Code(20 mil):20 ~ 370 mm		Code 128(10 mil):10 ~ 400 mm Code 39(5 mil):40 ~ 160 mm Data Matrix(10 mil):30 ~ 200 mm QR Code(15 mil):15 ~ 280 mm QR Code(20 mil):20 ~ 370 mm	
Communication protocol	SmartSDK,USB(HID/CDC)	SmartSDK,TCP Client,FTP,TCP Server,UDP,Serial	Wireless handheld code reader: Bluetooth Smart base: SmartSDK, USB(HID/CDC), Bluetooth	Wireless handheld code reader: Bluetooth Smart base: SmartSDK, TCP Client, Serial , FTP, TCP Server, UDP, Bluetooth
Data interface	USB2.0,DC terminal	Fast Ethernet(100 Mbit/s),RS-232,DC terminal	USB 2.0, DC terminal	Fast Ethernet(100 Mbit/s), RS-232, DC terminal
Power supply	Network interface: 12 VDC to 24 VDC USB interface: 5 VDC(USB), 12 VDC to 24 VDC(DC terminal)	Network interface: 12 VDC to 24 VDC USB interface: 5 VDC(USB), 12 VDC to 24 VDC(DC terminal)	Wireless handheld code reader: 3.8 VDC(battery providing power) Smart base: 5 VDC(USB), 12 VDC to 24 VDC(DC terminal)	Wireless handheld code reader: 3.8 VDC(battery providing power) Smart base: 12 VDC to 24 VDC
Max. power consumption	Network interface: 1.8 W @ 12 VDC USB interface: 1.5 W @ 5 VDC(USB), 1.8 W @ 12 VDC(DC terminal)	Network interface: 1.8 W @ 12 VDC USB interface: 1.5 W @ 5 VDC(USB), 1.8 W @ 12 VDC(DC terminal)	Wireless handheld code reader: standby mode: 0.8 W @ 3.8 VDC, working mode: 1.6 W @ 3.8 VDC, sleep mode: 0.6 W @ 3.8 VDC Smart base: 4.5 W @ 5 VDC(USB), 6.6 W @ 12 VDC(DC terminal)	Wireless handheld code reader: standby mode: 0.8 W @ 3.8 VDC, working mode: 1.6 W @ 3.8 VDC, sleep mode: 0.6 W @ 3.8 VDC Smart base: 6.6 W @ 12 VDC
Focal length	4.7mm		4.7mm	
Lens mount	Red LED		Red LED	
Aiming system	Cross laser aiming		Cross laser aiming	
Dimension	74.4 mm × 86.6 mm × 190.2 mm		74.4mm×86.6mm×179.5mm	
Weight	Approx. 160 g(0.4 lb.)	Approx. 160 g(0.4 lb.)	Wireless handheld code reader: Approx. 230 g(0.5 lb.) Smart base: Approx. 180 g(0.4 lb.)	
Temperature/ Humidity	Working temperature: –10 °C to 50 °C(14 °F to 122 °F) Storage temperature: –20 °C to 60 °C(–4 °F to 140 °F) 20% RH to 80% RH(no condensation)		Working temperature: –10 °C to 50 °C(14 °F to 122 °F) Storage temperature: –20 °C to 60 °C(–4 °F to 140 °F) Charging temperature: 0 °C to 40 °C(32 °F to 104 °F) 20% RH to 80% RH(no condensation)	
Client software	IDMVS		IDMVS	

Dimension



Unit:mm

Code Reading Light

Key Features

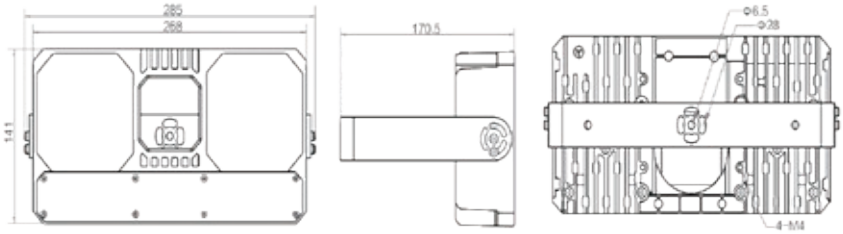
- It can be directly adapted to and controlled by our smart code reader
- Concentrated light with high luminous efficiency
- Industrial design, using acrylic transparent material to ensure brightness while reducing eye discomfort
- Professional structure drive and light distribution design, long service life
- No harmful metal such as lead and mercury, green and environmental protection



Specifications

Parameter \ Model	MV-LB-270-140-4030WL-A	MV-LB-270-140-4030WL-IR	MV-LB-270-140-4030WL-B
Light Type	Steady Light, 32 LEDs	Infrared,32 LEDs	Blue,32 LEDs
Center Illumination	25000lux@1000mm	0.03mW/mm²@1500mm	1300lux@1500mm
Uniformity	0.5	0.5	0.65
Luminous Flux	11700lm	Radiation flux Approx.30W	2010lm
CRI	>70	/	/
Wavelength	380 ~ 780nm	850nm	465 ~ 475nm
Beam Angle	40°×30°		
Working Distance	1.8m	1.5m	1.5m
Power Supply	24VDC		
Power Consumption	130W@24VDC	120W@24 VDC	130W@24 VDC
Dimension	141mm×268mm×170.5mm		
Weight	Approx. 2 kg(8.8 lb.)		
Shell Material	Aluminum Alloy		
Wire Length	10m		
Ingress Protection	IP40		
Temperature/Humidity	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: -30 °C to 70 °C(-22 °F to 158 °F) 20% to 80% RH, without condensation		

Dimension



Unit:mm

Integration Code Reader

Key Features



- Integrated structure design of camera lens light source,with high integration. Out of the box, the product is easy to install and debug
- The integration code reader has a built-in deep learning barcode reading algorithm, can efficiently read a variety of logistics bar codes
- The standard product can achieve quick debugging and deployment, and complete complex multi-package code reading with industrial PC.
- Realize the collection and integration of images and data, which can be stored and uploaded locally to provide traceability
- Adopt professional light path design with high energy utilization rate, lamp bead particle has stable performance and long life
- The brightness of the light source can be adjusted via the software with strong environmental adaptability.
- Seamlessly connect with common express logistics management systems to provide real-time and effective data for logistics and production enterprises

Specifications

Model / Paramete	MV-PD010003-06M-12C	MV-PD010003-12M-16C	MV-IDS006M-12C-C	MV-IDS012M-16C-C	MV-IDS020M-20C-C
Type	Standard Integration Code Reader		Smart Integration Code Reader		
Symbologies	1D codes: Code 39, Code 93, Code 128, Codabar, EAN 2D codes: QR Code, Data Matrix		1D codes:Code 128, Code 39, Code 93, Codabar, EAN8, EAN13, ITF25 , ITF14, UPCA, UPCE 2D codes: QR Code, Data Matrix		
Focal length	12mm	16mm	12mm	16mm	20mm
Best working distance	900mm	1550mm	1050mm	1870mm	1600mm
Field of view(range)	550mm×340mm@10 mil	730mm×550mm@10 mil	650mm×440mm@10 mil	870mm×635mm@10mil	1050mm×705mm@10mil
Depth of field	500mm	650mm	500mm	700mm	650mm
Resolution	3072×2048	4024×3036	3072×2048	3968×3000	5440×3648
Max.Frame Rate	17fps	9.6fps	28fps	20fps	10fps
Mono/color	Mono8				
Data Interface	GigE				
Digital I/O	6-pin connecting terminal provides power and I/O, including opto-isolated input × 1(Line 0), and bi-directional non-isolated I/O × 1(Line 2)		6-pin green connecting terminal provides power and I/O,including opto-isolated input × 1(Line 0), opto-isolated output × 1(Line 1) and bi-directional non-isolated I/O × 1(Line 2)		
Power Supply	24VDC				
Power Consumption	<20W@24VDC	<44W@24VDC	< 53W@24VDC		
Dimension	153.4mm×164.4mm×159.1mm		164.2mm×149.6mm×159.1mm		
Weight (Without Lens)	Approx. 990 g(2.2 lb.)	Approx. 1500 g(3.3 lb.)	Approx. 990 g(2.2 lb.)		
Temperature/ Humidity	Working temperature: 0 °C to 50 °C(32 °F to 122 °F) Storage temperature: -30 °C to 70 °C(-22 °F to 158 °F) 20% to 80% RH, non-condensing				
Client software	MVS, Code Platform		IDMVS	IDMVS	IDMVS

Dimension



Unit:mm

Line Laser 3D Camera

Key Features



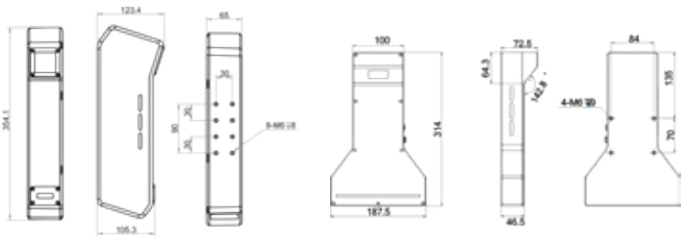
- Built-in wide dynamic image processing and high precision measurement algorithm
- Optimized efficiency, supporting up to 6m/s pipeline speed
- Sub-pixel technology with accuracy up to 5mm
- High power laser module with wider dynamic range
- Narrow band filter for better interference resistance
- Precise exposure synchronization for more stable performance nce
- Support volume(length, width, Hight and integral volume), point cloud, and positioning coordinate output

Specifications

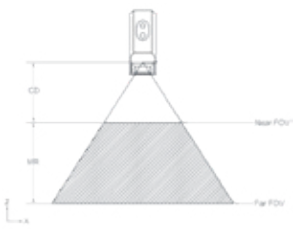
Model / Paramete	MV-DL2125-04H-R	MV-DL2126-04H-R*	MV-DL2125-04P-R*	MV-DL2126-04P-R*
Near FOV	1000mm	700mm	1000mm	700mm
Far FOV	2600mm	2000mm	2600mm	2000mm
Clearance Distance(CD)	700mm	260mm	700mm	260mm
Measurement Range(MR)	1000mm	470mm	1000mm	470mm
Measuring accuracy(X/Y/Z)	± 5 mm(regular object)			
Detection Speed	3 m/s @ ±5 mm detection accuracy			
Max. Scan Frame Rate	600 fps @ 1 m3 measurement range	600 fps @300 mm measurement range	1140fps @ 1 m3 measurement range	1140fps @300 mm measurement range
Data Type	Point cloud data, length/ width/height, integral volume, peak coordinates, depth image	Point cloud data, length/ width/height, integral volume, top coordinates	Point cloud data, length/ width/height, integral volume, peak coordinates, depth image	Point cloud data, length/ width/height, integral volume, top coordinates
Trigger Mode	External trigger, encoder trigger(max. 15 KHz trigger signal supported)			
Data Interface	Gigabit Ethernet(1000M bit/s)			
Digital I/O	12-pin M12 interface provides I/O, including opto-isolated input × 3(Line 0/3/6), opto-isolated output × 3(Line 1/4/7), RS-232 × 1.			
Power Consumption	10W@12VDC	10W@12VDC	19.2W@12VDC	16.8W@12VDC
Laser Safety Level	Class 3B			
Dimension	354.1mm×65mm×123.4mm	314mm×187.5mm×72.5mm	354.1mm×65mm×123.4mm	314mm×187.5mm×72.5mm
Weight	1.6 kg(3.5 lb.)	2 kg(4.4 lb.)	1.6 kg(3.5 lb.)	2 kg(4.4 lb.)
Temperature/ Humidity	Working temperature: 0 °C to 45 °C(32 °F to 113 °F) Storage temperature: –30 °C to 80 °C(–22 °F to 176 °F) 20%RH to 85% RH, no condensation			

Notice: * will be released soon

Dimension



Measurement Range Diagram



Unit:mm

Sensor

Photoelectric Sensor

CE RoHS

Key Features

- Provides a clear red spot for ease of alignment.
- Supports sensitivity adjustment, and light-on/dark-on switch.
- Adapts to complex light environment with anti-interference capability.
- Supports IP67.

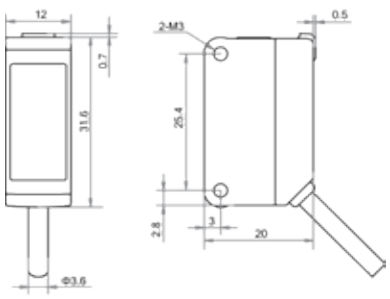


Specifications

Paramete \ Model	MV-PE5101/-P MV-PE5112/-P	MV-PE5301/-P MV-PE5313/-P	MV-PE5602/-P MV-PE5603/-P
Type	Through-beam sensor	Retro-reflective sensor	Diffuse-reflective sensor
Detecting distance	15m;30 m	0.1-4m;0.1-1m	300mm;1000 mm
Sensing target	Opaque object above Φ15 mm	Opaque object, semi-transparent object, and mirror above Φ50 mm	White paper(100 mm × 100 mm) White paper(300 mm × 300 mm)
Output	NO/NC(supports light-on/dark-on switch)		
Light source	Red LED 660 nm Infrared LED 850 nm	Red LED 650 nm; Infrared LED 850 nm	Red LED 660 nm
Response time	≤500 us		
Sensitivity adjustment	/;Trimmer(200°)		< 10% of set distance
Repeatability(perpendicular to sensing axis)	≤0.5 mm		Trimmer(200°)
Supply voltage	12 VDC to 24 VDC(tolerance ± 10%), including Ripple(P-P) 10% or less		
Residual voltage	≤2 V		
Operating current	≤20 mA		
Max. sink/source current	≤100 mA		
Circuit protection	Reverse polarity protection, overcurrent protection, and overvoltage protection		
Insulation resistance	20 MΩ or more(between the terminal block for power supply and the housing)		
Withstand voltage	1000 VAC, 1 min(between the terminal block for power supply and the housing)		
Weight	Transmitter: approx. 45 g(0.1 lb.) (including cable) Receiver: approx. 45 g(0.1 lb.) (including cable)	Approx. 45 g(0.1 lb.)(including cable)	
Temperature	Working temperature: –25 °C to 55 °C(–13 °F to 131 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F)		
Humidity	35 ~ 85%RH		
Ambient illumination	Sunlight: < 10000 lux Incandescent lamp: < 3000 lux		
Ingress protection	IP67		
Material	Housing: polycarbonate Lens: acrylic		
Indicator	Operation indicator: orange(receiver) Stability indicator: green(receiver) Power indicator: orange(transmitter)	Operation indicator: orange Stability indicator: green	
Connecting method	Cable lead-out(standard length: 2 m)		
Vibration resistance	10 Hz to 500 Hz, double amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions		
Shock resistance	500 m/s², 3 times in each of the X, Y, and Z directions		
Certification	CE,RoHS		
Dimension	20 mm × 12 mm × 31.6 mm		

Paramete \ Model	MV-PE5501/-P MV-PE5502/-P	MV-PE5801/-P	MV-PE5715
Type	Diffuse-reflective sensor(with settable distance)	Diffuse-reflective sensor(definite-reflective)	Time-of-flight sensor
Detecting distance	5-100mm;10-350 mm	5-50mm	50 - 5000mm
Sensing target	Standard reflector(100 mm × 100 mm) with reflectivity of 5%	White paper(100 mm × 100 mm)	Standard reflector(100 mm × 100 mm) with reflectivity of 90%
Output	NO/NC(supports light-on/dark-on switch)		NPN/PNP switch and light-on/ dark-on switch
Light source	Red LED 650 nm; Red LED 660 nm	Red LED 650 nm	Infrared laser 905 nm
Response time	≤500 us		500 μs/10 ms switch
Sensitivity adjustment	< 10% of set distance		Class 1
Repeatability(perpendicular to sensing axis)	Multi-turn trimmer	Trimmer(200°)	Single teach-in button
Supply voltage	12 VDC to 24 VDC(tolerance ± 10%), including Ripple(P-P) 10% or less	12 VDC to 24 VDC(tolerance: ± 10%)	12 VDC to 24 VDC(tolerance ± 10%), including Ripple(P-P) 10% or less
Residual voltage	≤2 V		
Operating current	≤20 mA		≤35 mA@12V,≤20 mA@24V
Max. sink/source current	≤100 mA		
Circuit protection	Reverse polarity protection, overcurrent protection, and overvoltage protection		
Insulation resistance	20 MΩ or more(between the terminal block for power supply and the housing)		
Withstand voltage	1000 VAC, 1 min(between the terminal block for power supply and the housing)		
Weight	Approx. 45 g(0.1 lb.)(including cable)		
Temperature	Working temperature: –25 °C to 55 °C(–13 °F to 131 °F) Storage temperature: –30 °C to 70 °C(–22 °F to 158 °F)		
Humidity	35 ~ 85%RH		
Ambient illumination	Sunlight: < 10000 lux Incandescent lamp: < 3000 lux		
Ingress protection	IP67		
Material	Housing: polycarbonate Lens: acrylic		
Indicator	Operation indicator: orange Stability indicator: green		
Connecting method	Cable lead-out(standard length: 2 m)		
Vibration resistance	10 Hz to 500 Hz, double amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions		
Shock resistance	500 m/s², 3 times in each of the X, Y, and Z directions		
Certification	CE,RoHS		
Dimension	20 mm × 12 mm × 31.6 mm		

Dimension



Unit:mm

Light Curtain Sensor

CE RoHS

Key Features



- Rapid response with the fastest response time of ≤ 1.2 ms.
- Provides 10 mm or 20 mm optical axis spacing and multiple lengths, meeting different requirements.
- Stable and reliable, and esistant to strong electromagnetic interference and optical interference.

Specifications

Model / Paramete	GLC10-S31	GLC10-S47	GLC10-S63	GLC10-S79	GLC10-S95
Response time	≤2ms	≤2.5ms	≤ 3ms	≤4ms	≤4.5ms
Resolution	15 mm	15 mm	15 mm	15 mm	15 mm
Output	NPN,PNP,RS-485				
Working range	0-5m				
Wavelength	850nm				
Number of optical axes	31	47	63	79	95
Optical axis spacing	10 mm	10 mm	10 mm	10 mm	10 mm
Working height	300mm	460mm	620mm	780mm	940mm
Supply voltage	12~24V DC±10%				
Residual voltage	PNP≤2 V,NPN≤2V				
Operating current-receiver	≤54 mA	≤74 mA	≤94 mA	≤114 mA	≤134 mA
Operating current-transmitter	≤32 mA				
Load current	≤100 mA				
Circuit protection	Reverse connection protection, over-current protection, over-voltage protection				
Insulation resistance	20 MΩ above(between power connection terminal and enclosure)				
Withstand voltage	1000V AC, 1 minute(between power connection terminal and enclosure)				
Load capacitance	100 mf				
Load inductance	1H				
Serial port	RS-485				
Baud rate	38400bps				
Function	TBB(Blocked Optical Axis)				
Dimension	35 mm × 35 mm × 335 mm(aviation plug excluded)	35 mm × 35 mm × 495 mm(aviation plug excluded)	35 mm × 35 mm × 655 mm(aviation plug excluded)	35 mm × 35 mm × 815 mm(aviation plug excluded))	35 mm × 35 mm × 975 mm(aviation plug excluded)
Weight	950 g	1400 g	1860 g	2135 g	2770 g
Temperature	Working temperature: –25 °C to 55 °C Storage temperature: –30 °C to 70 °C				
Humidity	35 ~ 85%RH				
Ambient illumination	Sunlight: <10000 lux Incandescent light: <3000 lux				
Ingress protection	IP65				
Material	Enclosure: PC plastic Lens: acrylic				
Indicator	Optical axis unaligned: red Optical axis aligned: green				
Connection	Cable with M12 male connector				
Vibration resistance	10 Hz to 500 Hz, with up and down vibration amplitude of 1.5 mm, and 2 hours in each of the X, Y, and Z directions.				
Shock resistance	500m/s², and 3 times in each of the X, Y, and Z directions.				
Certification	CE,RoHS				

Paramete \ Model	GLC20-S16	GLC20-S24	GLC20-S32	GLC20-S40	GLC20-S48
Response time	≤ 1.5ms	≤ 1.5ms	≤2ms	≤2.5ms	≤2.5ms
Resolution	25 mm	25 mm	25 mm	25 mm	25 mm
Output	NPN,PNP,RS-485				
Working range	0-5m				
Wavelength	850nm				
Number of optical axes	16	24	32	40	48
Optical axis spacing	20 mm	20 mm	20 mm	20 mm	20 mm
Working height	300mm	460mm	620mm	780mm	940mm
Supply voltage	12-24V DC±10%				
Residual voltage	PNP≤2 V,NPN≤2V				
Operating current-receiver	≤34 mA	≤44 mA	≤54 mA	≤64 mA	≤74 mA
Operating current-transmitter	≤32 mA				
Load current	≤100 mA				
Circuit protection	Reverse connection protection, over-current protection, over-voltage protection				
Insulation resistance	20 MΩ above(between power connection terminal and enclosure)				
Withstand voltage	1000V AC, 1 minute(between power connection terminal and enclosure)				
Load capacitance	100 mf				
Load inductance	1H				
Serial port	RS-485				
Baud rate	38400bps				
Function	TBB(Blocked Optical Axis)				
Dimension	35 mm × 35 mm × 335 mm(aviation plug excluded)	35 mm × 35 mm × 495 mm(aviation plug excluded)	35 mm × 35 mm × 655 mm(aviation plug excluded)	35 mm × 35 mm × 815 mm(aviation plug excluded)	35 mm × 35 mm × 975 mm(aviation plug excluded)
Weight	950 g	1400 g	1860 g	2135 g	2770 g
Temperature	Working temperature: –25 °C to 55 °C Storage temperature: –30 °C to 70 °C				
Humidity	35 ~ 85%RH				
Ambient illumination	Sunlight: <10000 lux Incandescent light: <3000 lux				
Ingress protection	IP65				
Material	Enclosure: PC plastic Lens: acrylic				
Indicator	Optical axis unaligned: red Optical axis aligned: green				
Connection	Cable with M12 male connector				
Vibration resistance	10 Hz to 500 Hz, with up and down vibration amplitude of 1.5 mm, and 2 hours in each of the X, Y, and Z directions.				
Shock resistance	500m/s², and 3 times in each of the X, Y, and Z directions.				
Certification	CE,RoHS				

Dimension

GLC10



Transmitter



Receiver

GLC20



Transmitter



Receiver

Unit:mm

Vision Controller

VC2000 Series Vision Controller

Key Features

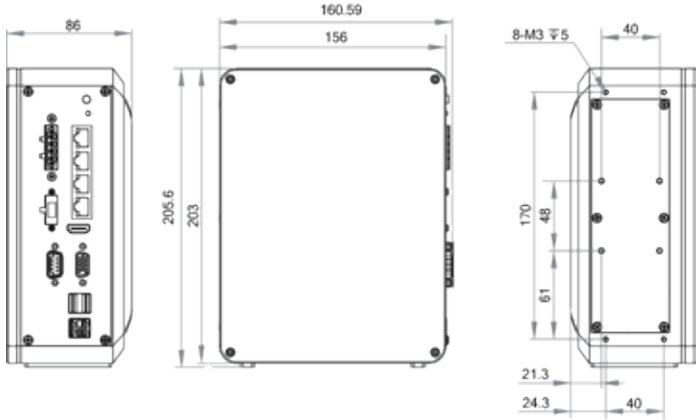
- Support GPIO function, output support NPN/PNP switching
- Support 4-channel Gigabit network port, support high-speed and stable image transmission
- Support 4-way light source control, imaging more high-definition
- Optional built-in USB interface or built-in dongle device, convenient for field deployment and maintenance



Specifications

Paramete \ Model	MV-VC2000-128G40-NN	MV-VC2000-128G40-2T
CPU	Intel® Celeron™ J6412	
Memory	8GB	
Storage	128GSSD	128GB SSD+ 2T HDD
GPU	Intel® UHD Graphics for 10th Gen Intel® Processors	
Operating system	Windows 10,not active	
Video output	HDMI interface × 1, VGA interface × 1	
Light interface	/	
Network interface	GigE interface × 4	
USB interface	USB 2.0 × 2, USB 3.0 × 2,support the extension of 1 built-in USB 2.0 interface	
Serial port	RS-232 × 1, supports switching to RS-485 or RS-422	
Power supply	24VDC	
Power consumption	48W	
Dimension	160.59 mm × 205.6 mm × 86 mm	
Weight	Approx.2kg	
Temperature/Humidity	0~50°C ,20%~80% RH(no condensation)	

Dimension



Unit:mm

VC3000 Series Vision Controller

Key Features

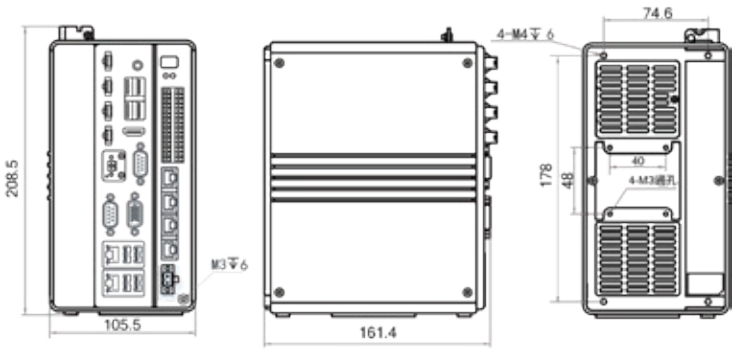


- Equipped with desktop Intel CPU, providing powerful computing performance
- Provides extended slot to connect with image frame grabbers
- Supports GPIO and NPN/PNP switching for output
- Supports PCIe 3.0 ×16 interface.
- Built-in USB 3.0 dongle slot for on-site maintenance

Specifications

Model / Paramete	MV-VC3101H-128G60	MV-VC3201H-128G60	MV-VC3301H-128G60	MV-VC3501H-128G60	MV-VC3701H-128G60
CPU	Intel® Celeron™ G4900	Intel® Pentium™ G5400	Intel® Core™ i3-8100	Intel® Core™ i5-8500	Intel® Core™ i7-8700
Memory	8GB	8GB	8GB	8GB	8GB
Storage	128G SSD	128G SSD	128G SSD	128G SSD	128G SSD
GPU	Intel® HD Graphics 610			Intel® HD Graphics 630	
Operating System	Unactivated 64-bit Windows 10				
Video output	HDMI interface × 1, VGA interface × 1 Supports dual display outputs, max. resolution 1920 × 1080 @60 Hz				
GPIO	Opto-isolated input × 8, opto-isolated output × 16 Output supports NPN/PNP switch				
Network Interface	GigE interface × 6				
USB Interface	USB 2.0 × 4, USB 3.0 × 4, built-in USB 2.0 × 1				
Serial Port	RS-232 × 2, supports switching to RS-485 and RS-422				
Power Supply	24VDC				
Power Consumption	95W				
Dimension	161.4mm×208.5mm×105.5mm				
Weight	Approx. 2.1 kg(4.6 lb.)				
Temperature /Humidity	0~50°C, 20% to 95% RH, non-condensing				

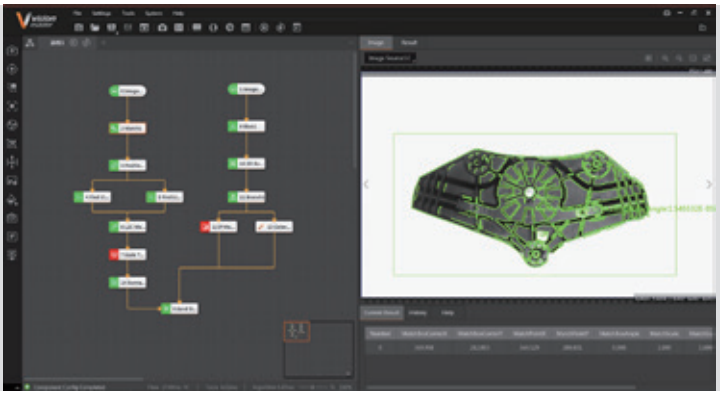
Dimension



Unit:mm

VM Algorithm development platform

Algorithm development platform is a machine vision software independently developed by Hikrobot, which is dedicated to providing customers with algorithm tools to quickly solve vision applications, and can meet machine vision applications such as visual positioning, size measurement, defect detection and information recognition.



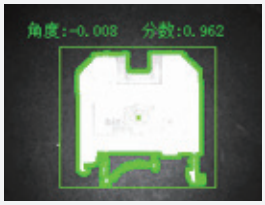
Features:

- It consists of nearly a thousand completely self-developed image processing operators and a variety of interactive development tools, including 160 + module tools, supporting a variety of operating systems and image acquisition hardware devices, which can meet the needs of positioning, measurement, identification and detection in the field of machine vision applications.
- Fully graphical interactive interface, function icons are intuitive and easy to understand. Dragging operation can quickly set up visual scheme. Module operation status is independently identified and displayed in real time.
- Users can create visual solutions according to their needs, customize the running interface, and integrate background images or company logos on the running interface to meet the personalized needs of customers.
- Compatible with GigE Vision and USB3 Vision protocol standards, allowing access to multiple camera brands. Support local image and camera real-time image processing.
- The secondary development is simple and easy to use. The simplified interface can save 90% of the code. The new tool can be imported into Visual Studio with one key. It supports the interface development of QT, MFC, WPF and WinForm.
- Support the development of user-defined modules. Users can directly drag and use the user-defined algorithm after it is packaged as a VM module.
- Support TCP/IP, ModBus, serial port, UDP, Ethernet/IP and other common industrial communication protocols, compatible with the communication of mainstream PLC models.

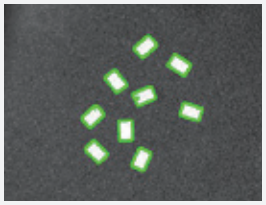
Positioning and measuring tools:

Accurately and efficiently locate any geometric element in the image with 1/16 pixel accuracy.

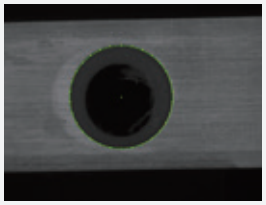
- Efficient template matching tool to overcome differences in sample translation, rotation, scaling, and illumination.
- Quickly and accurately find the position of circles, lines, blobs, edges, vertices, and other geometric objects.
- Accurately measure shapes, dimensions, areas, distances, angles, intersections, and other geometric properties.
- It can be used in robot guidance and other vision tools to provide position information and presence information.



Trait matching



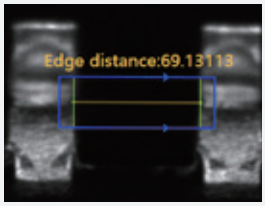
Blob analysis



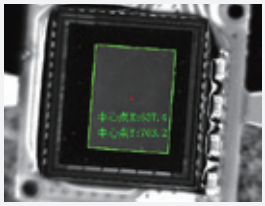
Circle search



Edge intersection



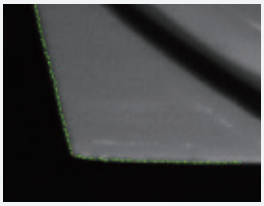
Edge distance measurement



Rectangle search



Parallel lines search



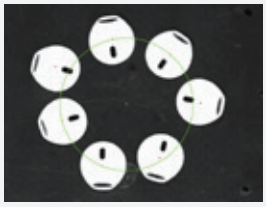
Peak search



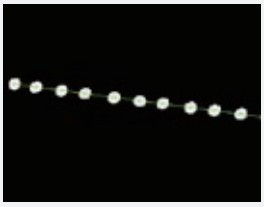
C2C measurement



P2C measurement



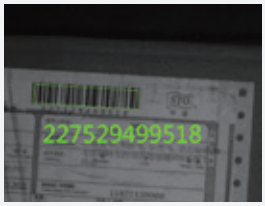
Circle fit



Straight line fit

Identification tools:

- Fast and accurate reading of digital information code.
- OCR algorithm based on deep learning can adapt to the recognition of complex background, low contrast, deformation and other characters.
- One-dimensional code and two-dimensional code of various types can be identified with different positions, angles and illumination. The influence of image distortion can be effectively overcome.
- Provides continuous, accurate, high-speed reading of ID information for part tracking.
- Support multiple VeriCode accurate identification in case of strong interference.
- It supports CPU and GPU versions of deep learning code reading algorithm, and also carries out accurate positioning and recognition in complex background.



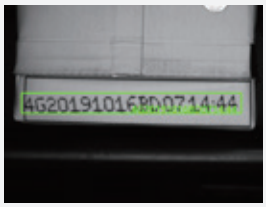












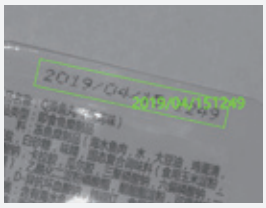




1D code



2D code



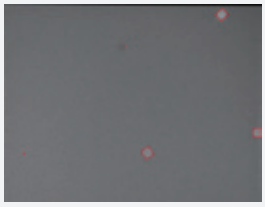


OCR

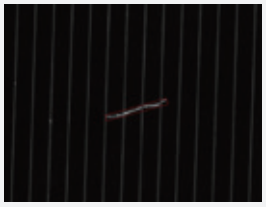
Defect detection tool:

Accurately identify defects on the surface, shape and contour of the workpiece.

- Based on deep learning technology, it can detect fine surface scratches and spots, and overcome the interference of surface texture, color and noise.
- Accurate detection of workpiece shape and contour defects, can overcome the interference of burrs, color, noise.
- Reliable tool for comparing standard parts to locate small differences in workpiece.



Surface bright spot



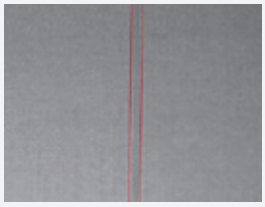
Surface scratch



Abnormal shape



Incomplete contour



Scratch detection



Character defect



Broken edge detection

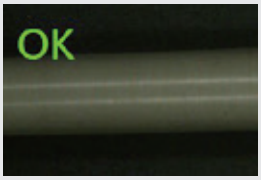
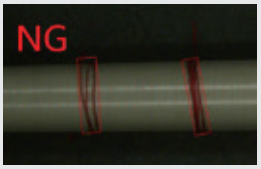
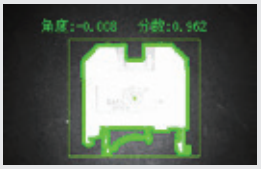
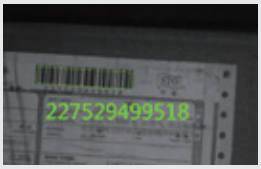


Dirt detection

List of algorithm platform tools:

Toolbox	Enumeration Of Tools
Acquisition (5)	Image Source, Multi-Image Acquisition, Image Output, Image Buffer, Light Source
Locating (27)	Contour Match, High-Precision Match, Fast Match, Gray Model Match, Mark Locating, Position Fixture, Blbo Analysis, Blob Label Analysis, Circle Search, Ellipe Find, Matrix Circle Find, Line Search, Line Search Group, Multi-Line Search, Edge Intersection, Quadrilateral Search, Parallel Line Search, Calculate Parallel Line, Rectangle Search, Find Median Line, Find Vertical Line, Caliper, Edge Search, Peak Search, Position Fixture, Target Tracking
Measurement (10)	Line-to-Circle Measurement, Circle-to-Circle Measurement, Point-to-Circle Measurement, Point-to-Line Measurement, Line-to-Line Measurement, Point-To-Point Measurement, Intensity Measurement, Edge Distance Measurement, Pixel Count, Histogram
Recognition (12)	BcR, 2D BcR, OCR, DL Character Recognition G/C, DL Code Reading G/C, DL Character Locating G/C, DL Single Character Detection G/C, ML Classifier
Image Generation (3)	Circle Fit, Line Fit, Geometry Generation
Calibration (9)	Calibration Board Calibration, Camera Mapping, N-point Calibration, Translation Calibration, Distortion Calibration, Mapping Calibration, N-image Calibration, Load Calibration, Rotate Calibration
Deep Learning (19)	DL Image Segmentation G/C, DL Classification G/C, DL Object Detection G/C, DL Image Retrieval G/C, DL Anomaly Detection G/C, DL Instance Segmentation G/C, DL Unsupervised Segmentation G, Quick Image Segment, DL Register Classify G/C, Register Segmentation G/C, Register Search G/C, Unsupervised Classification G/C
Calculation (11)	Single Point Alignment, Single Point Grab, Single Point Map Alignment, Single Point Rectify, Calibration Transformation, Point Set Alignment, Rotation Calculate, Line Alignment, Scale Transformation, Variable Calculation, Coordinate Transform
Image Processing (21)	Image Processing Combination, Image Morphology, Image Binarization, Image Filtering, Image Enhancement, Distortion Correction, Image Computing, Image Clarity Estimation, Image Fixture, Shading Correction, Image Resize, Affine Transformation, Ring Expansion, Copy Fill, Frame Mean, Normalization, Image Correction, Geometric Transformation, Image Stitching, Multi-image Fusion, Normalization
Split Combination (6)	Divide Image, 2D Array Correct, Label Filter, Box Merge, Box Overlap, Box Filter
Color Processing (5)	Color Extraction, Color Measurement, Color Transformation, Color Recognition, Color Generation
Defect Detection (13)	OCV, Surface Defect Filter, Arc Edge Defect Detection, Line Edge Defect Detection, Arc-pair Defects Detection, Line-pair Defects Detection, Edge Combination Defect Detection And Edge-pair Combination Defect Detection Respectively, Edge Model Defect Detection, Edge-pair Model Defect Detection, Anomaly Detection, Edge Position Trend Analysis, Edge Pair Position Trend Analysis
Logic Tools (19)	Condition Branch, Condition Detection, Branch, Branch String, Save Text, Logic, Format, String Comparison, Shell, Group, Point Set, Time-consuming Statistics, Data Set, Trigger Module, Graphics Collection, Sorting, Filtering, Classification, Database Storage
Communication (5)	Receive Data, Send Data, Camera IO (Support TCP/IP, Modbus, UDP, Serial Port, Ethernet/IP And Other Common Industrial Protocols; Support Communication With Mainstream Brand PLC), Protocol Analysis, Protocol Assembly

Classic Application

Presence/ Absence Detection	Front/ Rear Detection	Position Judgment	Color Processing
			
			
Locating	**Measurement**	**OCR**	**Code Reading**
			
			
			

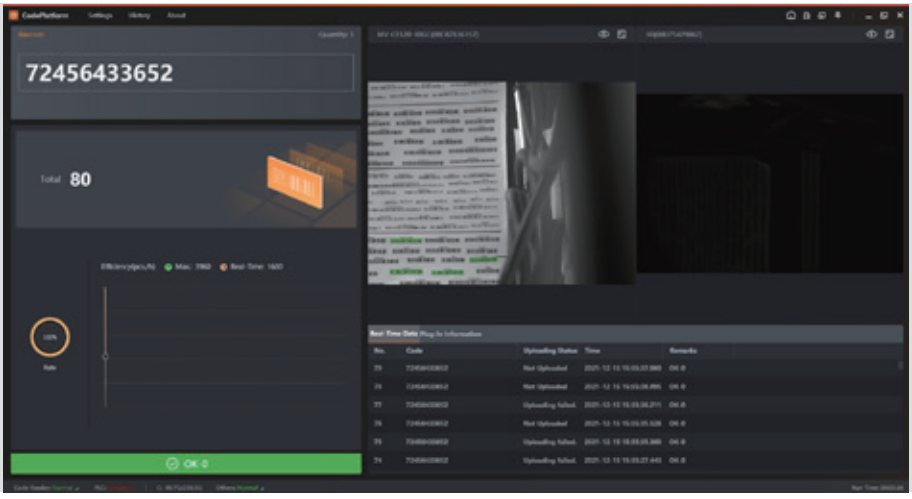
CodePlatform

CodePlatform is a comprehensive reading software platform, including data acquisition, image processing, data fusion, data communication, data statistics and other functions. The platform has rich functions and strong compatibility, which can meet the flexible code reading requirements of various complex scenarios in logistics enterprises and manufacturing.

CodePlatform integrates advanced machine vision algorithms and equipment control functions to effectively solve the problems of traditional logistics, such as high operating costs, low manual operation efficiency, high labor intensity and human interference. It realizes automatic reading of parcel data, including barcode, weight, volume and other parcel information, and provides a series of visual solutions, which has become an indispensable part of the logistics industry.

Key Features

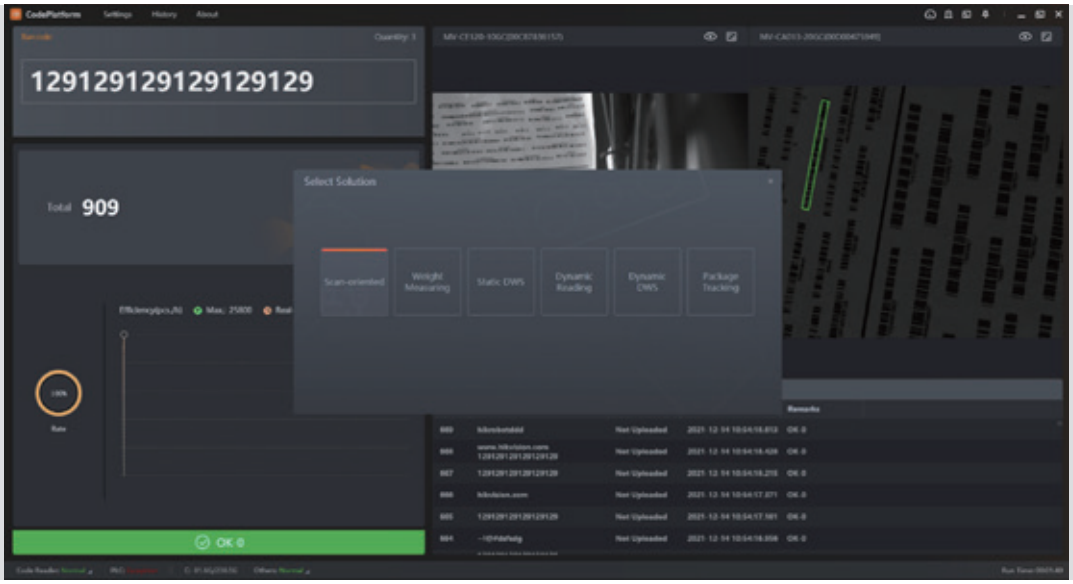
- Codeplatform supports Scan-oriented, Weight Measuring, Static DWS, Dynamic Reading, Dynamic DWS, Package Tracking solutions. According to the actual application scenarios, users can choose the corresponding schemes to meet diverse read requirements.
- The interface features rich information, including real-time package information, read package list, real-time camera picture, device status information, total number of bar codes, recognition rate and processing efficiency, improving users' viewing and operation experience while meeting a large load of information.
- Codeplatform supports focus output, location output, window output, TCP output, UDP output, HTTP output, and serial port output. Users can customize configurations based on data templates, providing high flexibility.
- CodePlatform has convenient integrated configuration, including camera configuration, bar code configuration, weight configuration, fusion mode configuration, filter rule configuration, output configuration, image storage configuration, etc., which is convenient for centralized configuration to meet the requirements of solution implementation.
- Package data and pictures can be stored, queried and exported based on time, bar code, weight, volume, and upload status, facilitating data traceability.



Six Code Reading schemes

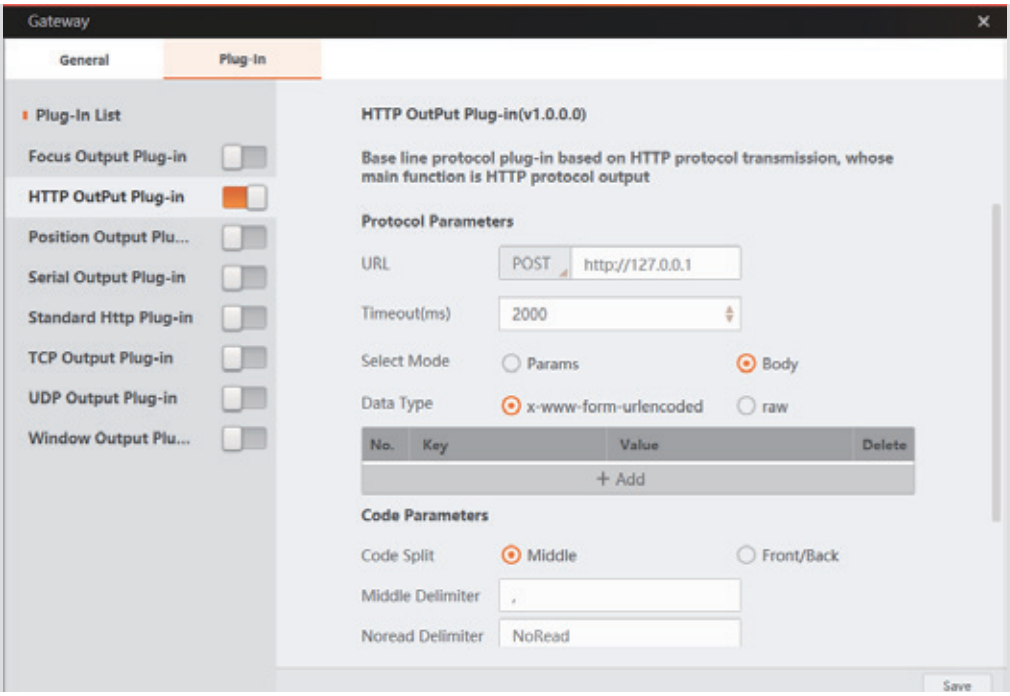
- **Scan-oriented:** Use one or more industrial cameras (or smart code readers) to set up side by side, continuously and quickly read the barcode on the package.
- **Weight Measuring:** Use one Industrial camera (or smart code reader) to achieve efficient and accurate reading of package barcodes, and at the same time, it integrates the weight information quickly collected by electronic scales to quickly complete barcode reading and package weighing.
- **Static DWS:** Use one Industrial camera (or smart code reader) to achieve efficient and accurate reading of package barcodes, and one stereo camera to measure the volume, and at the same time, it integrates the weight information quickly collected by electronic scales to quickly complete barcode reading and package weighing.

- **Dynamic Reading:** It adopts the combination of smart code reader, line laser stereo camera and dynamic scale to quickly complete the real-time collection and fusion output of bar code, weight and volume information of dynamic packages on the conveyor, and realize automatic sorting of parcels with the sorting equipment of the transport center. The packet flow is controlled by smart reader trigger, independent of external trigger command.
- **Dynamic DWS:** It adopts the combination of smart code reader, line laser stereo camera and dynamic scale to quickly complete the real-time collection and fusion output of bar code, weight and volume information of dynamic packages on the conveyor, and realize automatic sorting of parcels with the sorting equipment of the transport center. PLC is generally used to control the trigger and packet flow of the code reader.
- **Package Tracking:** The smart code reader and volume camera are used to read the barcode and collect the volume information of the package, and the package tracking and unread package positioning are realized by predicting the position of the package on the conveyor.



Communication protocol

It integrates various output protocols through plug-ins. It has eight basic output plug-ins, including focus output, HTTP output, location output, serial port output, HTTP standard protocol output, TCP output, UDP output, and window output. At the same time, we have a strong R&D team to provide customized content for users' special communication needs.



Algorithms Introduction

Code-reading Algorithms

All mainstream codes supported

1D Code:



Code128



Code39



Code93



Code11



Codabar



EAN



MSI



Matrix 2 of 5



INDUSTRIAL25



CHINAPOST



ITF25

2D Code:



DM



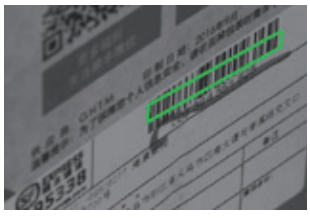
QR

Stacked Code:

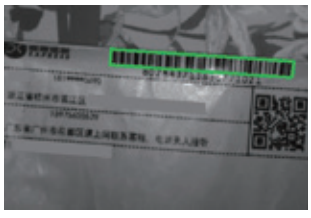


PDF417

Powerful decoding in demanding situations



Incline



Partial fold



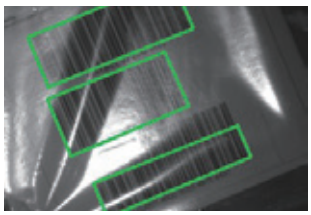
Blur



Distortion



Stains



Reflection



Wrinkles



Film cover

OCR

Fast and accurate information collection from shipment waybill

- The OCR algorithms based on deep learning can adapt complex background, low contrast and character distortion.
- Robust algorithms makes characters identifiable under different position, angle and lighting environment.
- Coupled with code reading algorithms, Hikrobot's system is able to provide fast, stable and accurate information collection for parcel tracking.



Deep Learning Algorithm



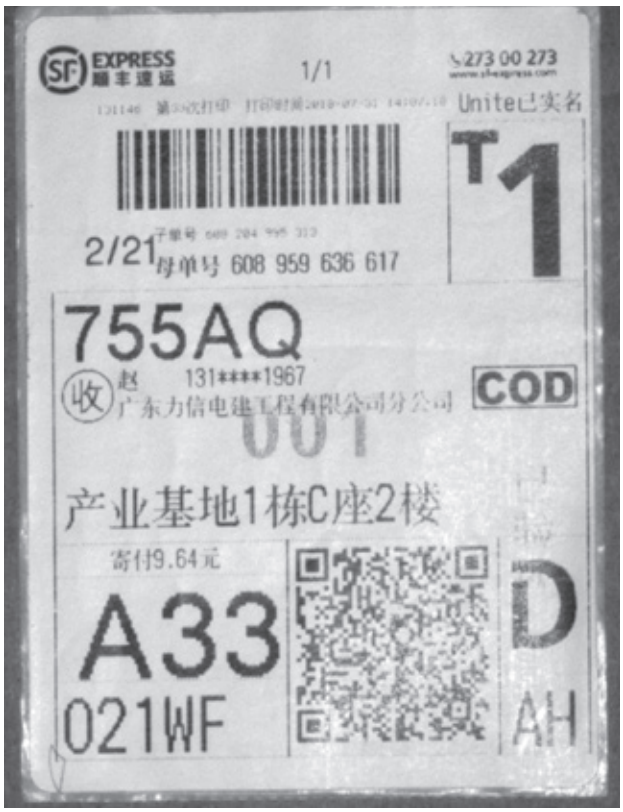
Original Image

The Hikrobot self-developed deep learning algorithm has also been applied to image processing for logistic industry. After training based on huge amount of samples, the algorithm is able to locate parcel or shipment waybill in the image rapidly, and automatically crop, rotate and enhance the image. The intelligent image processing algorithms makes the information clearer for users while lowering the requirement on storage capacity.

Image Cropping



Image Cropping



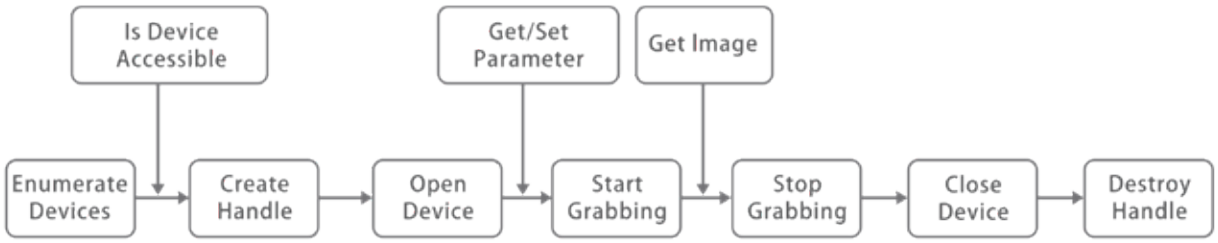
Client Software and Development Kit for Smart Code Readers

The IDMVS client is developed for debugging smart code readers. The client supports Parameter Configuration, Image Preview, Viewing History, Statistics, Photo Saving and Video Recording, etc. Besides, IP Configuration tool, Firmware Upgrade tool, Virtual Code Reader and Log Viewing tool are integrated in the client.

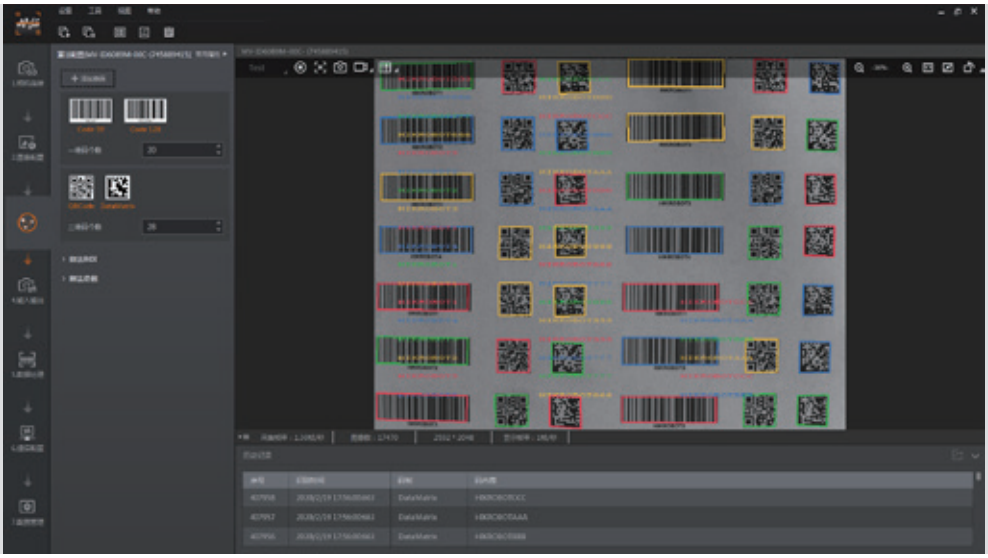
Key Features

- Simple installation, no need to install additional drivers to operate.
- Support multi-platform operation. Compatible with Windows XP 32-bit, Windows 7/10 32/64-bit operating system.
- User experience-centered interface design and friendly interaction design. Complete the code reader parameter configuration through the configuration wizard.
- Support connecting from multiple code readers and collecting and previewing data simultaneously. Up to 16 screens can be previewed at the same time in one client and screens can be quickly switched.
- Integrate multiple simplicity tools to complete the operation on the code reader and PC quickly and easily.

SDK Calling Process



IDMVS Main Interface



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Here is the QR code of official website

https://www.hikrobotics.com/cn/machinevision/service/download?module=0

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