Logistic Vision Solutions

VISION FOR IMAGINATION

www.hikrobotics.com

HIKROBOT

CONTENTS

Company Profile ---- 4

Overview ---- 5

Application Systems ---- 8

Dynamic DWS System ---- 8
Static DWS System ---- 10
Parcel Bin-picking System ---- 11
Six-sided Code Reading System ---- 12
Singulation System ---- 13
Dynamic Scanning & Positioning System ---- 14
Dynamic scanning system ---- 15
Hikrobot EDP system ---- 16
Cross-belt Five-sided Scanning System ---- 17

HiFeeder Bin-picking client ---- 18

SingulatorControl Client ---- 19

CodePlatform ---- 20

Smart Code Reader ---- 22

ID6000 Series Smart Code Reader ---- 22
ID7000 Series Smart Code Reader ---- 24
IDH Handheld Scanner ---- 25

Code Reading Light ---- 27

Integration Code Reader ---- 28

3D Camera ---- 29

Line Laser 3D Camera ---- 29

RGB-D Smart 3D Camera ---- 30

Vision Controller ---- 32

VC2000 Series Vision Controller ---- 32
VC3000 Series Vision Controller ---- 33

Algorithms Introduction ---- 34

Client Software and Development Kit for Smart Code Readers ---- 36

Download ---- 36

Hangzhou Hikrobot Co.,Ltd.

Hikrobot is a global manufacturer and supplier of mobile robot and machine vision products. Relying on the over 1500 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. In 2022, China's total logistics volume exceeded 48 trillion USD, up 3.6% year-on-year, and total logistics industry revenue reached 1.7 trillion USD, up 5% year-on-year. Express business completed 110.58 billion parcels, a net increase of 2.28 billion compared to 2021. 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.

Solution

Hikrobot logistic vision solutions, composed of smart barcode reader, 3D camera, special designed light source and self-developed code reading software, have been deployed in every logistics process, such as inbound, distribution, sorting, outbound, etc. They give a perfect answer to the problem that modern logistics industry is facing. With high efficiency, high accuracy and traceability, Hikrobot logistic vision solutions satisfy the need of automation and informatization. That's what we can do to help you bring your business to next level.

P15

Dynamic scanning system

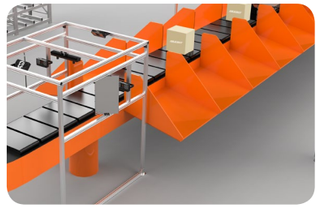
P14

Dynamic Scanning & Positioning System

P10

Static DWS System

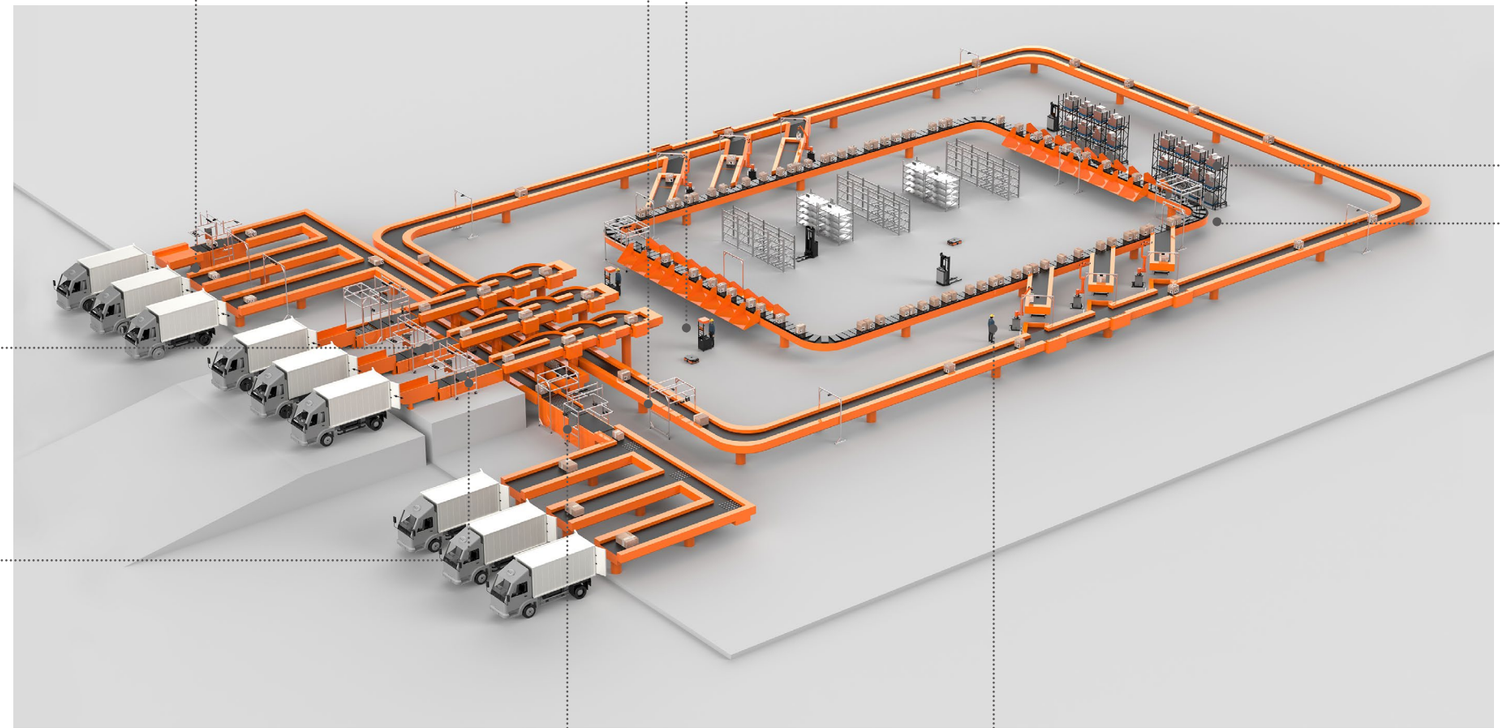
P17



Cross-belt Five-sided Scanning System

Dynamic DWS System

P8



P16

Hikrobot EDP system

P13

Singulation System

P12

Six-sided Code Reading System

P11

Parcel Bin-picking System

Application Systems

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 pcs/hour.

- **Traceability**
  Combined data and images are either saved locally or uploaded to pre-defined server to realize parcel information retrieval, reducing errors during transport.

- **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 50% manpower in unloading and sorting section.

- **Real-time alarm**
  System halts on error with sound/light alarm for real-time handling if overlong, overweight or unlabeled parcel is detected.

- **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 pcs/hour	1500 pcs/hour
Save/upload images	Supported	Not supported
Weighing accuracy	±40 g	Unwarrantable
Volume measurement accuracy	±5 mm	Unwarrantable

Static DWS System

Solution

Static DWS system is divided into large DWS system and small DWS system, using 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.

Parameter	Hikrobot equipment	Manual
Symbologies	Code128,Code39,QR,DM,etc.	
Max. operation rate	1800~2400 pcs/hour	900~1200 pcs/hour
Save/upload image	Supported	Not supported
Weighing accuracy	±10 g	Unwarrantable
Volume measurement accuracy	±5mm	Unwarrantable

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.
- **Strong compatibility**
  large field of view, adapt to a variety of parcel forms, including flat pieces.

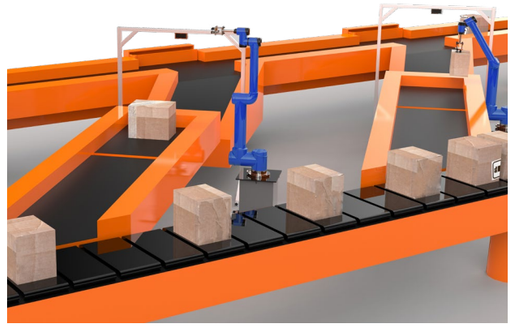
Parcel Bin-picking System

Solution

Hikrobot Parcel Bin-picking System addresses notably the current difficulties in manual parcel feeding process in CEPs, including higher labor cost, harder recruitment and limited working time. Based on RGB-D smart 3D camera, the system combines deep learning algorithms and traditional image processing algorithms, guiding robot to work full time with high efficiency.

Parameters	Hikrobot System
Max. efficiency*	1600 pph
Min.grasping area	120mmX80mm
Max parcel weight	Hard -5kg; Soft - 3kg
Success rate of picking	>99%
Double rate	3‰
Manual intervention	<1 time/shift

*Max operation efficiency is related to work cycle of the downstream sorting process and site layout.



Advantages

- **High efficiency**
  Single system achieves 1600pcs/hour efficiency, which realize full capacity of a typical loop cross-belt sorter counting 12-14 induction points. Besides, Parcel Bin-picking System works 24h non-stop, perfectly reducing the investment on human resources.
- **Stable and reliable**
  Deep learning based recognition algorithms makes parcel identification and location easier than ever, thus increasing the success rate of picking. The state-of-the-art motion planning algorithm ensures the avoidance of collision and singularity.
- **Intelligent hardcore**
  The RGB-D smart 3D camera uses in-built algorithms to calculate parcels' position information and can be connected to robot controller directly to save the cost of extra IPC.
- **Friendly HMI**
  The system is easy to use through the step-by-step configuration wizard and single-click hand-eye calibration.

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.

User-friendly

The software features simple operation, clear interface and complete functions.

Strong robustness

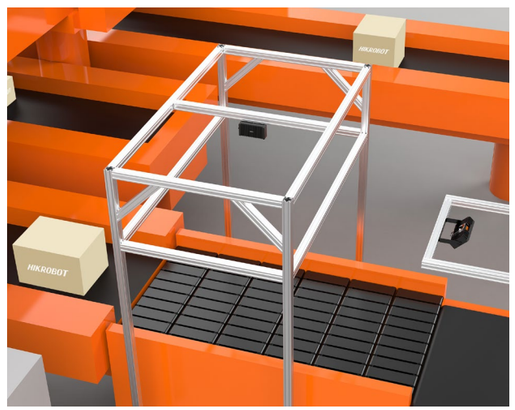
Independent developed code reading algorithm, strong adaptability to barcode distortion, crease, lamination and other situations, can identify cylindrical parts, slender parts, irregular parts, etc.

Singulation System

Solution

Hikrobot Singulation system uses RGB-D Smart 3D 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.

Parameters	Hikrobot System	Manual
Max. Efficiency	6000-10000 pph	~2000 pph
Interval Error	<10%	N/A
Singulation Accuracy	99.9%	N/A



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 3D 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.

Dynamic Scanning & Positioning System

Solution

With RGB-D Smart 3D Camera and intelligent reader as the core, dynamic 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.

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.

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

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.

Hikrobot EDP system

Solution

Hikrobot EDP (Empty, Double, Position) system is based on RGB-D Smart 3D Camera as the core, relying on our self-developed 3D image processing technology and deep learning positioning segmentation algorithm, to detect the number and position of parcels on the crossbelt. It is a full-featured visual inspection solution for all types of mainstream sorting machines, combining the functions of double detection, presence detection, parcel deviation correction and over-edge detection in one.

Parameter	Hikrobot EDP
Algorithm processing time	< 150 ms
Detection accuracy	> 99.9%
Parcel form	Carton boxes, soft bags, envelope pieces, woven bags, etc.
Maximum speed supported	3.5 m/s

Advantages

- **Feature-rich**
  Parcel presence detection, double parcel detection, position detection and over-edge detection in one machine, multi-purpose, with high cost performance.
- **Accurate and reliable**
  Combine 2D deep learning algorithm and 3D image processing algorithm to accurately determine the number and location of parcels.
- **Easy to use**
  Factory calibration of internal parameters, one-key system calibration on site, simple deployment.
- **Compatibility**
  Large field of view coverage, adaptable to a wide range of sorters such as crossbelt and pallet type.

Cross-belt Five-sided Scanning System

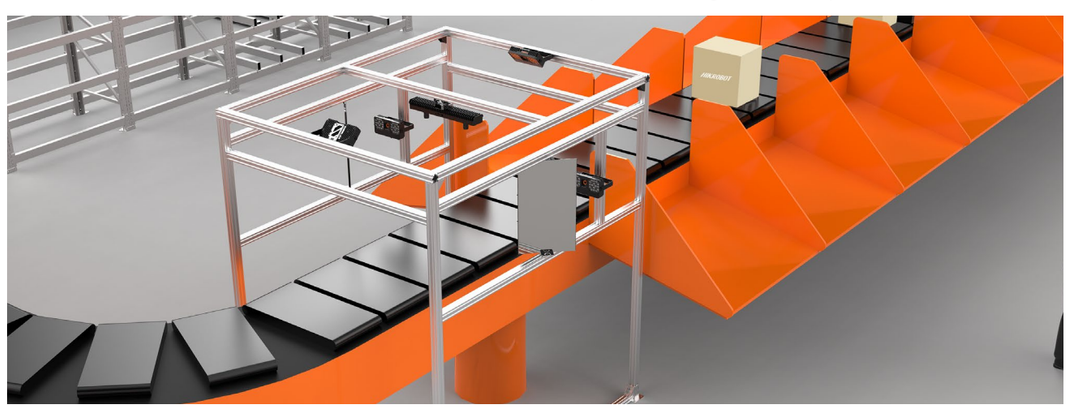
Solution

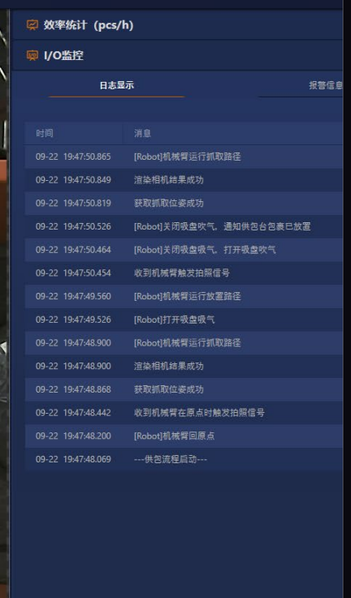
The cross-belt five-sided scanning system adopts five smart code readers. A single smart reader can cover the FOV of 740mm×390mm, and the DOF can reach more than 400mm, meeting the requirements of small and medium-sized cross-belt sorting machine for FOV, DOF and parcel spacing.

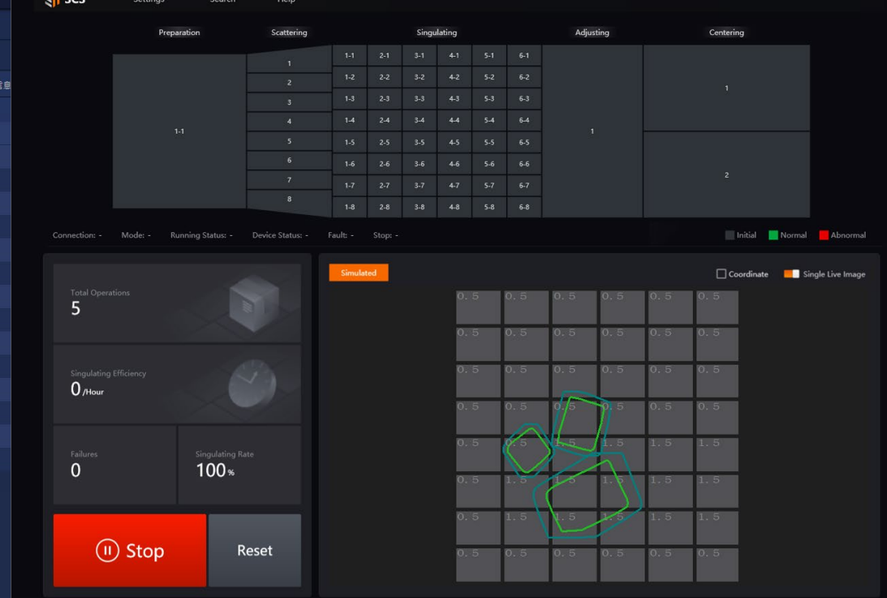
Parameter	Hikrobot Equipment
Symbologies	Code128,Code39,QR,DM,etc.
Communication mode	Gigabit Ethernet port
Save/upload images	Supported

Advantages

- **Efficient and stable**
  One single smart code reader can cover the whole FOV without data integration, making the system more stable.
- **High speed**
  The system is adept at high-speed applications and support up to 2.8m/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.







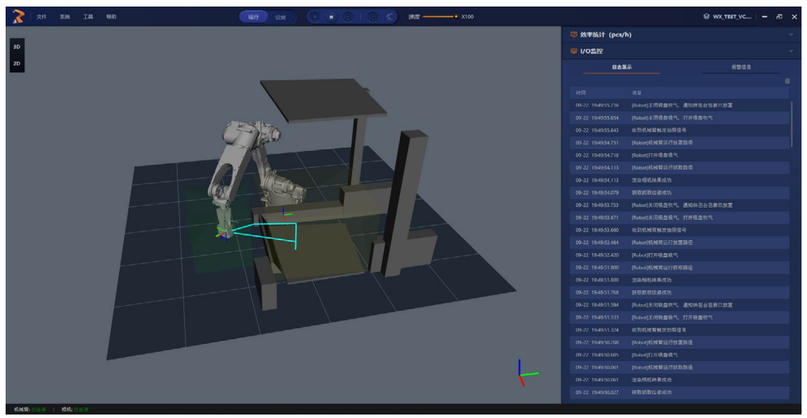
HiFeeder Bin-picking client

Software Introduction

HiFeeder Client is the software of Bin-picking system, which can access external devices such as RGB-D smart 3D camera and industrial robots, and the core functions include vision processing and trajectory planning. The vision processing uses powerful deep learning algorithms, based on millions of samples, and can still output accurate coordinates of parcel center points in the face of complex working conditions such as blocking, stacking, squeezing and creasing, and provides perfect trajectory calculation functions, such as calculation of grabbing and placing coordinates, trajectory planning and intelligent obstacle avoidance. In addition, it can also be adapted to industrial robots of major brands to achieve flexible control of the robot.

Key Features

- **One-button start**
  The system is easy to use, just simply operate the control buttons to start and stop the whole set of equipment.
- **Convenient supervision**
  User-friendly UI interface design, real-time monitoring of equipment operation status.
- **Fast debugging**
  Standardized debugging steps reduce the difficulty of debugging and achieve fast delivery to customers.



SingulatorControl Client

Software Introduction

SingulatorControl is the client software of Sigulation 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.

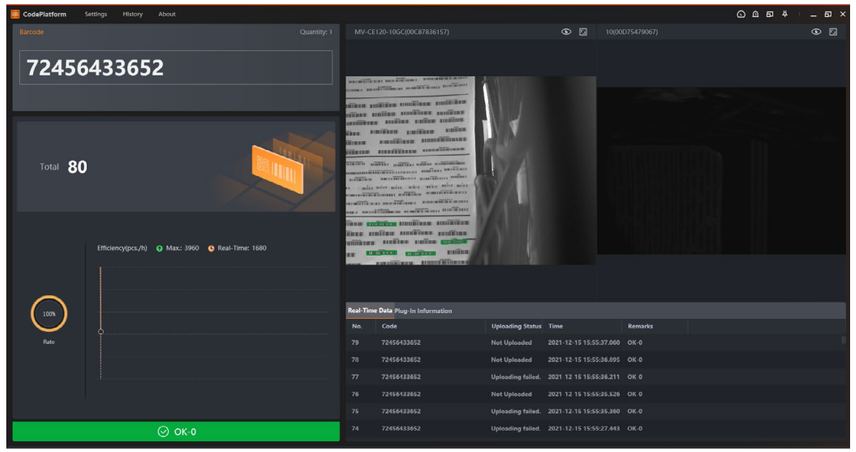
CodePlatform

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 such as surface tracking, which has become an indispensable part of the logistics industry.

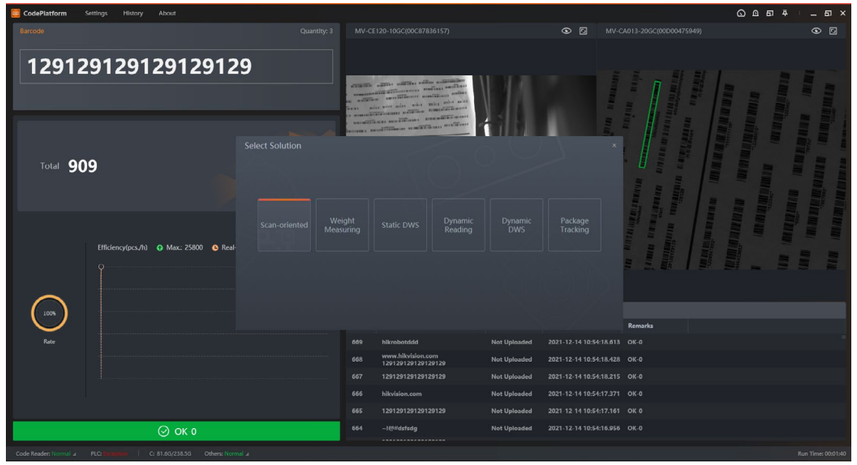
Key Features

- Codeplatform supports Static DWS, continuous scan, dynamic DWS, dynamic read, and 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.



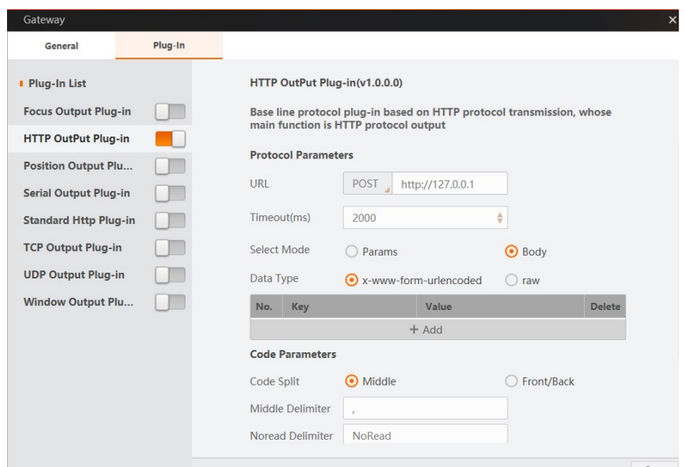
Six Code Reading schemes

- 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.



Smart Code Reader

ID6000 Series Smart Code Reader

CE FC RoHS

Key Features

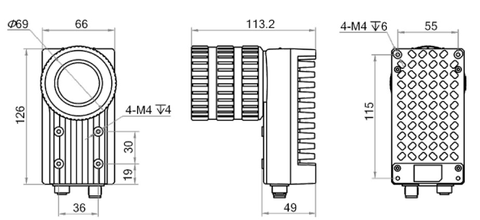
- Provide 20MP and 8.9MP ultra-high resolution specifications, covering a large field of view
- Provides 8.9MP high-resolution global shutter specification adapted to high-speed scenes and provides 4K horizontal resolution
- Provide logistics-specific deep learning algorithms that can deal with various 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
- IP67 protection level, meeting the requirement of harsh industrial enviroment

Specifications

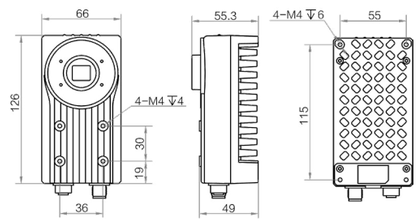
Parameter \ Model	MV-ID6089M-00C-NNG	MV-ID6200M-00C-NNG
Symbologies	1-dimensional codes: Code 39, Code 93, Code 128, ITF25, CodaBar, EAN, EAN8, EAN13, UPCA, UPCE 2-dimensional codes: QR,DM	
Max.Frame Rate	30 fps	20 fps
Max.Reading Speed	90 codes/sec	60 codes/sec
Pixel Size	3.45μm × 3.45μm	2.4μm×2.4μm
Sensor Size	1"	
Resolution	4096×2160	5440×3648
Communication Protocols	SmartSDK, TCP, UDP, Serial, FTP, HTTP	
Software	IDMVS	
Data Interface	Gigabit Ethernet (1000Mbit/s)	
I/O	12-pin M12 connector provides power and I/O, including 3 opto-siolated input, 3 opto-isolated output and 1 RS-232 serial port	
Power Supply	12~24VDC	
Power Consumption	< 12W@24VDC	
Lens Mount	C-Mount	
Lens Cap	Included	
Dimension	126mm×66mm×113.2mm	
Weight	Approx.750g	
IP Protection Level	IP67 (under proper installation of waterproof lens cap)	
Temperature/Humidity	Working temperature 0~50°C, storage temperature -30~70°C, 20%~95%RH without condensation	

Parameter \ Model	MV-ID6200PM-00C-NNG*	MV-ID6200EM-00C-NNG
Symbologies	1-dimensional codes: Code 39, Code 93, Code 128, ITF25, CodaBar, EAN, EAN8, EAN13, UPCA, UPCE 2-dimensional codes: QR,DM	
Max.Frame Rate	20 fps	10 fps
Max.Reading Speed	60 codes/sec	30 codes/sec
Pixel Size	2.5μm×2.5μm	2.4μm×2.4μm
Sensor Size	1"	
Resolution	5120×3968	5440×3648
Communication Protocols	SmartSDK, TCP, UDP, Serial, FTP, HTTP	
Software	IDMVS	
Data Interface	Gigabit Ethernet (1000Mbit/s)	
I/O	12-pin M12 connector provides power and I/O, including 3 opto-siolated input, 3 opto-isolated output and 1 RS-232 serial port	
Power Supply	12~24VDC	
Power Consumption	< 12W@24VDC	
Lens Mount	C-Mount	
Lens Cap	Not included	
Dimension	126mm×66mm×113.2mm	126mm×66mm×55.3mm
Weight	Approx.750g	Approx.550g
IP Protection Level	IP67 (under proper installation of waterproof lens cap)	IP64
Temperature/Humidity	Working temperature 0~50°C, storage temperature -30~70°C, 20%~95%RH without condensation	

Notice:* will be released soon.



Unit:mm



Unit:mm

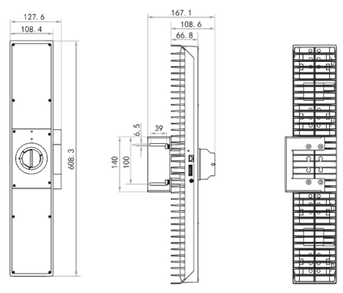
ID7000 Series Smart Code Reader

Key Features

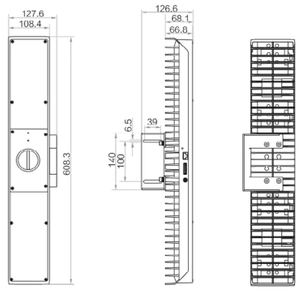
- Use 8K Sensor to achieve 1.2m wide coverage in narrow visual space
- Embedded deep learning code-reading algorithm efficiently reads multiple types of code
- Support real-time varialbe speed stitching, support the entire picture transmission
- Integrated double-sided 36LED wide-angle coverage, uniform 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

Parameter \ Model	MV-ID7080EM-35F-WHA	MV-ID7080PM-35F-WHA
Symbologies	1D Codes: Code 39, Code 93, Code 128, CodaBar, EAN, ITF25, etc. 2D Codes: QR code, DataMatrix, etc.	
Max.Line Rate	15kHz	20kHz
Pixel Size	4.7μm×4.7μm	5μm×5μm
Resolution	8K	
Communication Protocols	SmartSDK, TCP, UDP, Serial, FTP, HTTP	
Focal Length	35mm	
Working Distance	1000mm	
FOV	1000mm@10mil	1200 mm @10 mil
Client Software	IDMVS	
Data Interface	Gigabit Ethernet(1000Mbit/s)	
I/O	12-pin M12 connector provides I/O, including opto-isolated input (LineIn 0/1/2) × 3, opto-isolated output (LineOut 0/1) × 2, and RS-232 × 1.	
Power Supply	48VDC	
Power Consumption	180 W@48 VDC	
Lens Interface	F-mount, flange back focal length 46.5 mm	
Dimension(Without Lens)	608.3mm×127.6mm×167.1mm	608.3mm×127.6mm×167.1mm
Weight(Without Lens)	Approx. 6.5 kg	Approx. 6.5 kg
Temperature/Humidity	Working temperature 0 °- 50 °C, Storage temperature-30 - 70 °C, 20% to 95% RH, non-condensing	



Unit:mm



Unit:mm

IDH Handheld Scanner

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

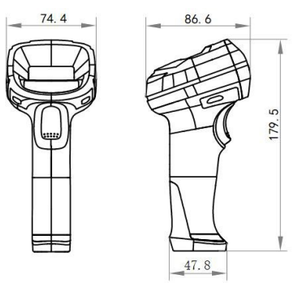
Specifications

Parameter \ Model	MV-IDH3013-05S-R1U*	MV-IDH3013-05S-R1L*
Category	Wired Handheld Code Reader	
Symbologies	1-dimensional codes: Code 39, Code 93, Code 128, CodaBar, EAN 8, EAN 13, Matrix 2 of 5, ITF 14, UPCA, UPCE 2-dimensional codes: QR Code, Data Matrix	
Depth of field	Code 39 (5 mil): 40 mm to 160 mm Code 128 (10 mil): 10 mm to 400 mm Data Matrix (10 mil): 30 mm to 200 mm QR Code (15 mil): 15 mm to 280 mm	
	QR Code (20 mil): 20 mm to 370 mm	
Min. accuracy	4mil	
Max. frame rate	50fps	
Pixel size	2.7 μm × 2.7 μm	
Resolution	1280 × 1024	
Focal length	4.7mm	
Communication protocol	SmartSDK, USB (HID/CDC)	SmartSDK, TCP Client, FTP, TCP Server, UDP, Serial
Light source	Red LED	
Aiming system	Cross laser aiming	
Client software	IDMVS	
Data interface	USB2.0, DC terminal	Fast Ethernet, RS-232, DC terminal
Drop height	1.5 m (59.1") , 50 times	
Power supply	5 VDC (USB), 12 VDC to 24 VDC (DC terminal)	12 VDC to 24 VDC
Max. power consumption	1.5 W@5 VDC (USB), 1.8 W@12 VDC (DC terminal)	1.75 W@12 VDC
Dimension	74.4 mm × 86.6 mm × 190.2 mm	
Weight	Approx. 160 g	
Temperature/Humidity	Working temperature: -20 °C to 50 °C (-4 °F to 122 °F) storage temperature: -40 °C to 70 °C (-40°F to 158 °F) 20% to 80% RH, non-condensing	

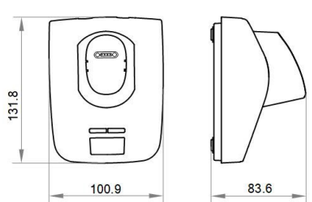
Notice:* will be released soon.

Parameter \ Model	MV-IDH3013B-05S-R1U*	MV-IDH3013B-05S-R1L*
Category	Wireless Handheld Code Reader	
Symbologies	1-dimensional codes: Code 39, Code 93, Code 128, CodaBar, EAN 8, EAN 13, Matrix 2 of 5, ITF 14, UPCA, UPCE 2-dimensional codes: QR Code, Data Matrix	
Depth of field	Code 39 (5 mil): 40 mm to 160 mm Code 128 (10 mil): 10 mm to 400 mm Data Matrix (10 mil): 30 mm to 200 mm QR Code (15 mil): 15 mm to 280 mm QR Code (20 mil): 20 mm to 370 mm	
Min. accuracy	4mil	
Max. frame rate	50fps	
Pixel size	2.7 μm × 2.7 μm	
Resolution	1280 × 1024	
Focal length	4.7mm	
Communication protocol	Wireless handheld code reader: USB (HID) Smart base: SmartSDK, USB (HID/CDC)	Wireless handheld code reader: SmartSDK Smart base: SmartSDK, TCP Client, TCP Server, Serial, FTP, UDP
Light source	Red LED	
Aiming system	Cross laser aiming	
Client software	IDMVS	
Data interface	USB2.0, DC terminal	Fast Ethernet, RS-232, DC terminal
Bluetooth	BT 5.0, 2.4 GHz to 2.4835 GHz, BLE	
Wireless range	70 m (open range)	
Battery	3150 mAh, chargeable lithium battery	
Charging time	Adapter charging: 4 h, USB charging: 8 h	4 h
Power supply	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	Wireless handheld code reader: 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: 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
Dimension	Wireless handheld code reader: 74.4 mm × 86.6 mm × 179.5 mm Smart base: 100.9 mm × 131.8 mm × 83.6 mm	
Weight	Wireless handheld code reader: Approx. 230 g Smart base: Approx. 180 g	
Temperature/Humidity	Working temperature: -20 °C to 50 °C (-4 °F to 122 °F), storage temperature: -30 °C to 60 °C (-22 °F to 140 °F), charging temperature: 0 °C to 45 °C (32 °F to 113 °F) 20% to 80% RH, non-condensing	

Notice:* will be released soon.



Unit:mm



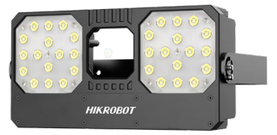
Unit:mm

Code Reading Light

CE FC RoHS

Key Features

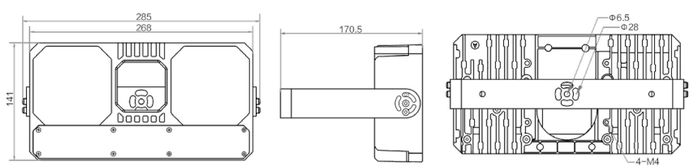
- It can be directly adapted to and controlled by our smart code reader
- Concentrated light with high luminous efficiency
- Industrial design, using acrylic transparent material to ensure brightness while reducing eye discomfort
- Professional structure drive and light distribution design, long service 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 *
Light Type	Constant 32 LED	infrared 32 LED
Center Illumination	25000 lux@1000 mm	0.03mW/mm²@1500mm
Uniformity	0.5	0.5
Luminous Flux	11700 lm	Radiant flux approx 30W
CRI	>70	\
Wavelength	380~780 nm	850nm
Beam Angle	40°X30°	40°X30°
Color Temperature	6500K	\
Working Distance	1.8m	1.5m
Power Supply	24VDC	
Power Consumption	130W(24VDC)	
Dimension	141 mm × 268 mm × 170.5 mm	
Weight	Approx. 2 kg	
Shell Material	Aluminum alloy	
Wire Length	10 m	
Ingress Protection	IP40	
Temperature/Humidity	Working temperature 0~50°C, storage temperature -30~70°C, 20%~80%RH without condensation	

Notice:Using infrared light source, it is necessary to verify the measured object in advance.
* will be released soon.



Unit:mm

Integration Code Reader

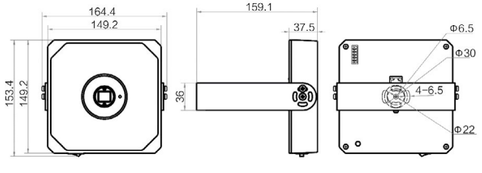
Key Features

- 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
- 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
- Adjustable light source brightness, strong environmental adaptability
- Seamlessly connect with common express logistics management systems to provide real-time and effective data for logistics and production enterprises

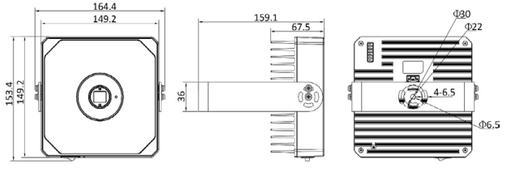
Specifications

Parameter \ Model	MV-PD010003-06M/C-12C	MV-PD010003-12M/C-16C	MV-IDS012M-16C-C *
Category	Industrial integration code reader		Smart integration code reader
Symbologies	1D Codes, Code 39, Code 93, Code 128, Codabar, EAN, etc. 2D codes: QR Code, Data Matrix, etc		
Max.Frame Rate	17fps	9fps	10fps
Resolution	3072×2048	4024×3036	4096×3000
DOF	500mm	650mm	700mm
FOV	550mm × 340mm@10 mil	730mm × 550mm@10 mil	870mm ×635mm@10mil
Focal Length	12mm	16mm	16 mm
Evenness	0.53	0.56	0.56
Luminous Flux	2500lm	5900lm	4200 lm
Color Temperature	5700K	6500K	6500K
Working Distance	900mm	1550mm	1870 mm
Data Interface	Gigabit Ethernet (1000Mbit/s)		
I/O	6-pin terminal including 1 opto-siolated input, 1 opto-isolated output and 1 bidirectional I/O		
Power Supply	24 VDC		
Power Consumption	<20W@24VDC	<44W@24VDC	<45W@24VDC
Dimension	153.4 mm×164.4 mm×159.1 mm		
Weight (Without Lens)	Approx. 990 g	Approx. 1500 g	Approx. 1550 g
Temperature/Humidity	Working temperature 0~50°C, storage temperature -30~70°C, 20%~80%RH without condensation		

Notice:* will be released soon.



Unit:mm



Unit:mm

3D Camera

Line Laser 3D Camera

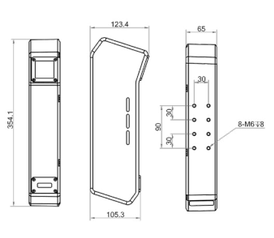
Key Features

- Built-in wide dynamic image processing and high precision measurement algorithm
- Optimized efficiency, supporting up to 3m/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

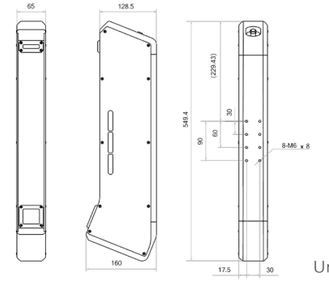
Specifications

Parameter \ Model	MV-DL1617-05L (OIML certification set)	MV-DL2125-03H-R *	MV-DL2125-04H-H *
Near FOV	1000mm		
Far FOV	2235mm	2600mm	2200mm
Clearance Distance (CD)	750mm	700mm	750mm
Measurement Range (MR)	1000mm		
Accuracy (X/Y/Z)	±5mm		
Detection Speed	1.5m/s@±5mm Accuracy	3 m/s @±5 mm	3m/s@±5mm Accuracy
Max. Scan Frame Rate	200Hz@1m³ MR	600 fps @1 m³ measurement range	600Hz@1m³ MR
Data Type	Origin image, point cloud data	Point cloud data, depth image, length/width/height, integral volume, top coordinates	Point cloud data, length/wide/height, integral volume, top characteristic coordinates
Trigger Mode	External trigger, encoder input trigger		
Data Interface	Gigabit Ethernet(1000M bit/s)		
Digital I/O	12-pin M12 interface provides I/O, including opto-isolated input × 1, opto-isolated output × 1, and RS-232 × 1	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	12-pin M12 interface provides I/O, including opto-isolated input × 3, opto-isolated output × 3, and RS-232 × 1
Power Consumption	<10 W@12VDC	12 VDC to 24 VDC	<10 W@12VDC
Laser Safety Level	3B @500 mw	Class2	Class2M
Dimension	549.4 mm × 65 mm × 160 mm	354.1 mm × 123.4 mm × 65 mm	354.1 mm×65 mm×123.4 mm
Weight	5 Kg	1.6 kg	1.6 Kg
Temperature/Humidity	Working temperature 0~45°C, storage temperature -30~80°C, 20%~85%RH without condensation		

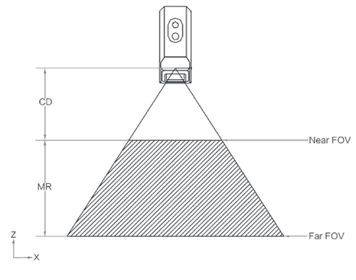
Notice:* will be released soon.



Unit:mm



Unit:mm



RGB-D Smart 3D Camera

Key Features

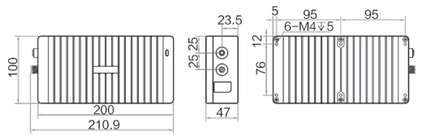
- In-built deep learning instance segmentation algorithms combining with 3D processing algorithm, generating more accurate location result
- Large FOV, perfect adaption to multiple applications such as singulation and robot picking
- Support simultaneous output of RGB and depth image, and multi-camera 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
- IP65 protection level, support 12~24V wide voltage supply and multiple trigger modes

Specifications

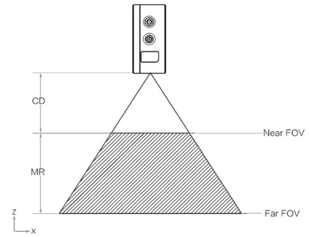
Parameter \ Model	MV-DB500S	MV-DB500S-R	MV-DB500S-S
Near FOV	580 mm × 470 mm		
Far FOV	2400mm×1800 mm		
Clearance Distance (CD)	500 mm		
Measurement Range (MR)	1500 mm		
Accuracy (Depth Image)	X,Y:5 mm@1 m; 10 mm@2 m Z:5 mm@1 m; 10 mm@2 m		
Accuracy (RGB Image)	X,Y:2.6mm@1m; 5.5 mm@2m		
Output Frame Rate	RGB-Depth sync output 18fps@1408×1024 30fps@704×512	8 fps@Grasp Mode Support HDR	30 fps@Singulation Mode
Data Format	Original image (mono and color images), correction image (left and right), depth image	Original image (mono and color images), depth image, RGB-D image, package grasping point information, instance segmentation image	Original image (mono and color images), depth image, RGB-D image, package posture information
Laser Safety Level	Class 1		
Interface	Gigabit Ethernet (1000Mbit/s)		
I/O	12-pin M12 interface provides I/O, including opto-isolated input × 3 , opto-isolated output × 3		
Power Supply	12~24 VDC		
Power Consumption	<9 W@24 VDC		
Dimension	200 mm×47 mm×100 mm		
Weight	Approx.1kg		
Temperature/Humidity	Working temperature 0~45°C, storage temperature -30~80°C, 20%~85%RH without condensation		

Parameter \ Model	MV-DB500S-C	MV-DB500S-V *
Near FOV	580 mm × 470 mm	
Far FOV	2400mm×1800 mm	
Clearance Distance (CD)	500 mm	
Measurement Range (MR)	1500 mm	
Accuracy (Depth Image)	X,Y:5 mm@1 m; 10 mm@2 m Z:5 mm@1 m; 10 mm@2 m	
Accuracy (RGB Image)	X,Y:2.6mm@1m; 5.5 mm@2m	
Output Frame Rate	7 fps@EDP Mode	8fps@Measuring mode
Data Format	Original image (mono and color images), depth image, RGB-D image,EDP detection result	Original image (mono and color images), depth image, volume data
Laser Safety Level	Class 1	
Interface	Gigabit Ethernet (1000Mbit/s)	
I/O	12-pin M12 interface provides I/O, including opto-isolated input × 3 , opto-isolated output × 3	
Power Supply	12~24 VDC	
Power Consumption	<9 W@24 VDC	
Dimension	200 mm×47 mm×100 mm	
Weight	Approx.1kg	
Temperature/Humidity	Working temperature 0~45°C, storage temperature -30~80°C, 20%~85%RH without condensation	

Notice:* will be released soon.



Unit:mm



Vision Controller

VC2000 Series Vision Controller

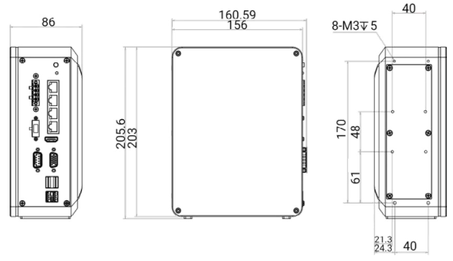
Key Features

- Equipped with the new Intel Elkhart lake platform processor, providing powerful computing performance
- 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

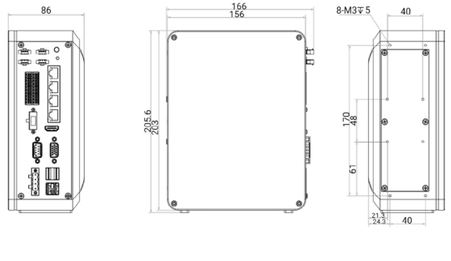
Specifications

Parameter \ Model	MV-VC2000-128G40-NN*	MV-VC2040-128G40-NN*	MV-VC2040-128G40-1T*
CPU	Intel® Celeron™ J6412		
Memory	8GB		
Storage	128 GB SSD		128 GB SSD + 1 TB HDD
GPU	Intel® UHD Graphics for 10th Gen Intel® Processors		
Operating system	Unactivated 64-bit Windows 10		
Video output	HDMI interface × 1, VGA interface × 1 Supports dual display outputs, max. resolution 1920 × 1080 @30 Hz		
Light interface	/	Light interface with 24 VDC constant voltage × 4	
Digital I/O	/	Opto-isolated input × 8, opto-isolated output × 8	
Network interface	GigE interface × 4		
USB interface	USB 2.0 × 2, USB 3.0 × 2		
Serial port	RS-232 × 1, supports switching to RS-485 or RS-422		
Power supply	24 VDC		
Power consumption	48W (without light source)120W (light source)		
Dimension	160.59 mm × 205.6 mm × 86 mm	205.6mm × 166 mm × 86 mm	
Weight	Approx. 2 kg		
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		

Notice:* will be released soon.



Unit:mm



Unit:mm

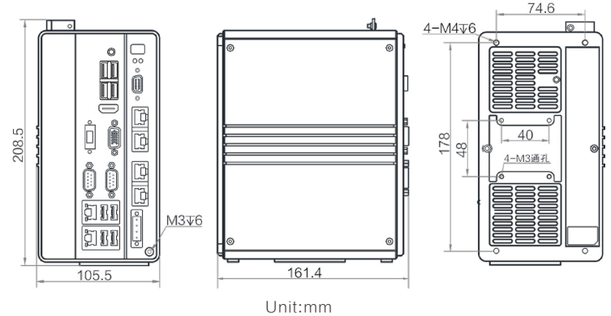
VC3000 Series Vision Controller

Key Features

- Equipped with desktop Intel CPU, providing powerful computing performance
- Provides extended slot to connect with image frame grabbers
- Supports 11-channel GPIO and NPN/PNP switching for output
- Adopts Intel® GigE interfaces for stable data transmission
- Built-in USB 3.0 dongle slot for on-site maintenance
- Light source, serial port, and IO extended modules are optional

Specifications

Parameter \ Model	MV-VC3101P-128G60	MV-VC3201P-128G60	MV-VC3301P-128G60	MV-VC3501P-128G60
CPU	Intel® Celeron™ G4900	Intel® Pentium™ G5400	Intel® Core™ i3-8100	Intel® Core™ i5-8500
Memory	8GB DDR4			
Storage	128G SSD			
GPU	Intel® HD Graphics 610	Intel® HD Graphics 610	Intel® HD Graphics 630	Intel®HD Graphics 630
Operating System	Windows 10			
Video output	HDMI interface × 1, VGA interface × 1 Supports dual display outputs, max. resolution 4096 × 2304 @24Hz			
GPIO	Opto-isolated input × 3, opto-isolated output × 8 Output supports NPN/PNP switch			
Network Interface	Intel® GigE interface × 6			
USB Interface	USB2.0×4, USB 3.0×4			
Serial Port	RS-232 × 2			
Power Supply	24VDC			
Power Consumption	150W			
Dimension	161.4mm × 208.5mm × 105.5mm			
Weight	Approx.2.1kg			
Temperature /Humidity	0~50°C, 20%~95%RH without condensation	0~50°C, 20%~95%RH without condensation	0~50°C, 20%~95%RH without condensation	0~50°C, 20%~95%RH without condensation



Unit:mm

Algorithms Introduction

Code-reading Algorithms

All mainstream codes supported

1D Code:

Code128

code39

Code93

Codell

Codabar

EAN

MSI

Matrix 2 of 5

INDUSTRIAL25

CHINAPOST

ITF25

2D Code:

DM

QR

Powerful decoding in demanding situations

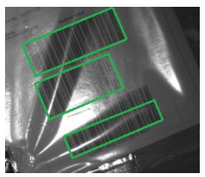
Incline

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

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.

Original Image

Image Cropping

Image Enhancement

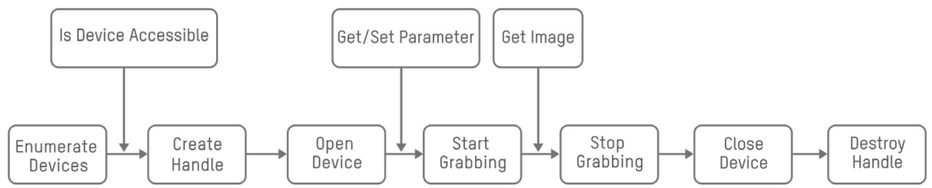
Client Software and Development Kit for Smart Code Readers

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.

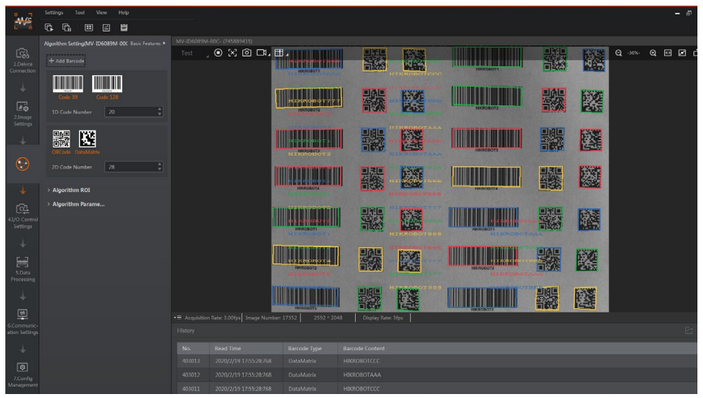
Key Features

- 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



Download

Here is the QR code of official website

Hikrobot

VISION, SEEING INFINITY

Logistics Vision Solution

Distributed by

HIKROBOT

No.399 Danfeng Road, Binjiang District,
Hangzhou 310052, China
Tel: 400-989-7998
www.hikrobotics.com

V.201.EN.23Q1.1