

HIKROBOT Machine Vision Products Overview

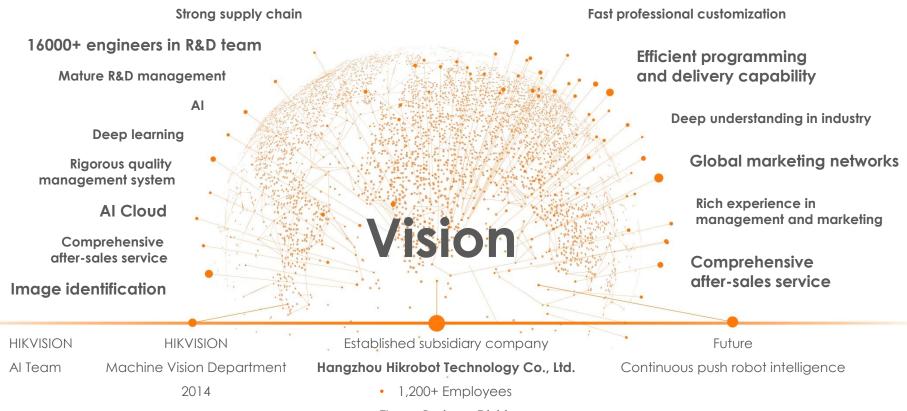
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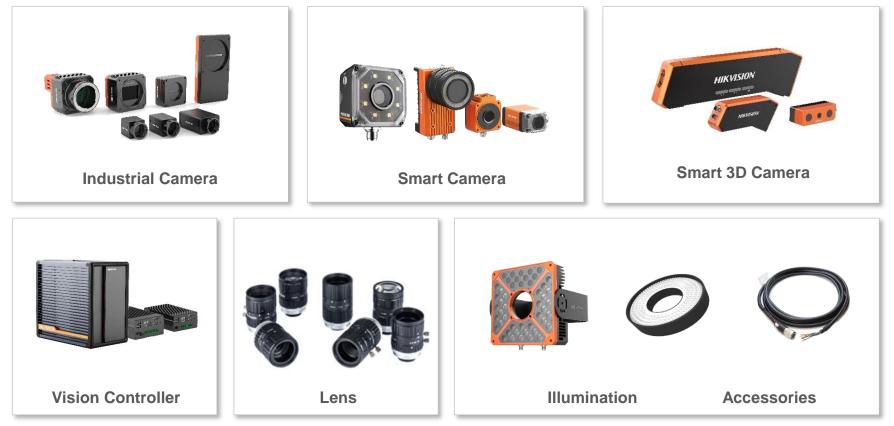
HIKROBOT Business



Three Business Divisions



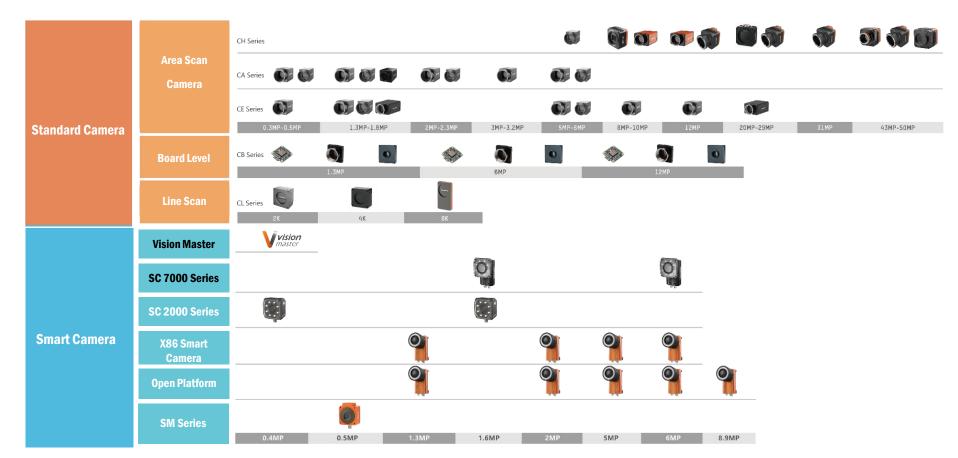
HIKROBOT Products



See Far, Go Further



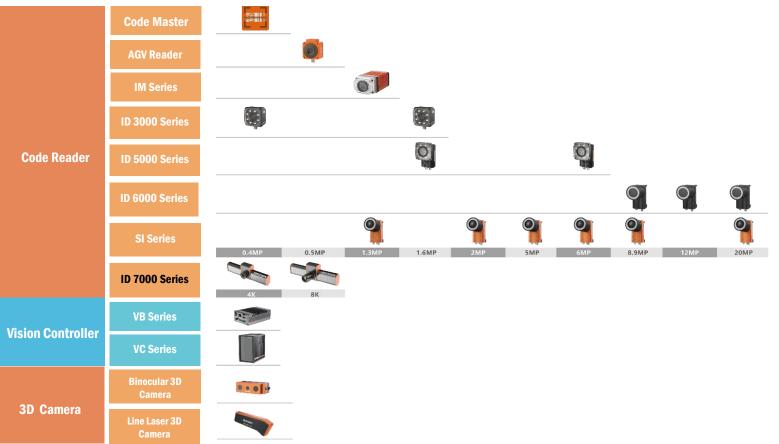
HIKROBOT Product Family



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HIKROBOT Product Family







HIKROBOT Industrial Camera





CE CA and CB Series Cameras

Features

- Compact structure design
- > AEC (automatic exposure control), LUT, Gamma Correction etc.
- > Both hardware and software trigger modes
- > 128MB onboard memory for burst transmission and retransmission
- > HDR polling
- > Compliant with GigE Vision, USB3 Vision and GenICam.
- > 1 x Opto-isolated input, 1 x Opto-isolated output and 1 x Bi-directional non-isolated



ON PYTHON/SONY IM 1.3mp/6mp/12mp USB3.0



Aptina/Sharp/ON PYTHON/SONY IMX

0.3mp/0.4mp/0.5mp/1.3mp/2,3mp/3.2mp /5mp/6mp/10mp/12mp/20mp

GigE/USB3.0



SONY IMX 8.9mp/12mp GigE/USB3.0



Sensor type Shutter type

PYTHON300

CA Series GigE Interface ADVANCED

Mode



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	MV-CA003-20GM/GC	0.3MP	672 × 512	4.8	300	PYTHON300 1/4"	
	MV-CA004-10GM/GC	0.4MP	720 × 540	6.9	312.9	IMX287 1/2.9"	
	MV-CA005-20GM/GC	0.5MP	808 × 608	4.8	116	PYTHON480 1/3.6"	
	MV-CA013-20GM/C/N	1.3MP	1280 × 1024	4.8	90	PYTHON1300 1/2"	
O monstrive	MV-CA016-10GM/C	1.6MP	1440 × 1080	3.45	78.2	IMX273 1/2.9"	
HIKVISION	MV-CA020-10GM/C	2MP	1624 × 1240	4.5	60	IMX430 1/1.7"	CMOS Global
	MV-CA020-20GM/C	2MP	1920 × 1200	4.8	51	PYTHON2000 2/3"	
	MV-CA023-10GM/C	2.3MP	1920 × 1200	5.86	41	IMX249 1/1.2"	
Note:	MV-CA032-10GM/C	3.2MP	2048 × 1536	3.45	37.5	IMX265 1/1.8"	
GM means Monochrome type GC means Color type	MV-CA050-10GM/C	5MP	2448 × 2048	5.45	23.5	IMX264 2/3"	
GN means Near-Infrared type	MV-CA050-20GM/C/N	5MP	2592 × 2048	4.8	22	PYTHON5000 1"	
	MV-CA060-10GM/C MV-CA060-11GM	6MP	3072 x 2048	2.	17	IMX178 1/1.8"	CMOS Rolling

Resolution (Pixels)

Pixel Size

(µm)

Frame rate

(fps)



CA Series USB3.0 Interface

ADVANCED

Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type	Shutter type
MV-CA003-21UM/C	0.3MP	640 × 480	4.8 µm	814 fps	PYTHON300 1/4"	
MV-CA004-10UM/C	0.4MP	720 × 540	6.9 µm	523.5 fps	IMX287 1/2.9"	
MV-CA013-21UM/C	1.3MP	1280 x 1024	4.8 µm	170 fps 90 fps	PYTHON1300 1/2"	
MV-CA016-10UM/C	1.6MP	1440 × 1080	3.45 µm	165.9 fps	IMX273 1/2.9"	CMOS
MV-CA020-10UM/C	2MP	1624 × 1240	4.5µm	89fps	IMX430 1/1.7"	Global
MV-CA023-10UM/C	2.3MP	1920 × 1200	5.86 µm	41 fps 40fps	IMX249 1/1.2"	
MV-CA050-11UM/UC	5MP	2448 × 2048	3.45 µm	35 fps	IMX264 2/3"	
MV-CA050-20UM/UC	5MP	2592 × 2048	4.8 µm	60fps 30fps	PYTHON5000 1"	







CE Series GigE Interface

Economic ٠

Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type	Shutter type
MV-CE003-20GM/GC	0.3MP	640 × 480	4.8 µm	173 fps	PYTHON480 1/3.6"CMOS	Global
MV-CE013-50GM/GC	1.3MP	1280 × 960	3.75 µm	30 fps	Sharp RJ33 1/3" CCD	Global
MV-CE050-30GM	5MP	2592 × 1944	2.2 µm	14 fps	Aptina MT9P031 1/2.5" CMOS	Global
MV-CE050-31GM/GC	5MP	2592 × 1944	2.2 µm	24 fps	Aptina AR0521 1/2.5" CMOS	Rolling
MV-CE100-30GM/GC MV-CE100-31GM	10MP	3840 × 2748	1.67 µm	7 fps	Aptina MT9J003 1/2.3" CMOS	Rolling
MV-CE120-10GM/GC	12MP	4024 × 3036	1.85 µm	9.6 fps	Sony IMX226 1/1.7" CMOS	Rolling
MV-CE200-10GM/GC MV-CE200-11GM	20MP	5472 × 3648	2.4 µm	6 fps	Sony IMX183 1" CMOS	Rolling



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CE Series USB3.0 Interface

Economic

Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type	Shutter type
MV-CE013-50UM/UC	1.3MP	1280 × 960	3.75 µm	30 fps	Sharp RJ33 1/3" CCD	Global
MV-CE013-80UM	1.3MP	1280 × 1024	4.0 µm	148 fps	Smartsens 1/2.7" CMOS	Global
MV-CE050-30UM/UC	5MP	2592 × 1944	2.2 µm	31 fps	Aptina AR0521 1/2.5" CMOS	Rolling
MV-CE060-10UM/UC	6MP	3072 × 2048	2.4 µm	42.7 fps	Sony IMX178 1/1.8" CMOS	Rolling
MV-CE120-10UM/UC	12MP	4000 × 3036	1.85 µm	30 fps	Sony IMX226 1/1.7" CMOS	Rolling
MV-CE200-10UM/UC MV-CE200-11UM	20MP	5472 × 3648	2.4 µm	14 fps	Sony IMX183 1" CMOS	Rolling





CB Series USB3.0 Interface

Board Level

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Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type	Shutter type
MV-CB013-20UM-B MV-CB013-20UC-B	1.3MP	1280 × 1024	5.5 µm	14 fps	PYTHON1300 1/2" CMOS	Global
MV-CB013-20UM-C/S MV-CB013-20UC-C/S	1.3MP	1280 × 1024	4.8 µm	170 fps	PYTHON1300 1/2" CMOS	Global
MV-CB060-10UM-B MV-CB060-10UC-B	6MP	3072 × 2048	2.4 µm	17 fps	Sony IMX178 1/1.8" CMOS	Rolling
MV-CB060-10UM-C/S MV-CB060-10UC-C/S	6MP	3072 × 2048	2.4 µm	17 fps 29 fps	Sony IMX178 1/1.8" CMOS	Rolling
MV-CB120-10UM-B/C/S MV-CB120-10UC-B/C/S	12MP	4032 × 3036	1.85 µm	28 fps 21 fps	Sony IMX226 1/1.7" CMOS	Rolling







Note:

-B means bare board -S means M12 mount -C means C mount

CH Series Cameras

Features

- > High performance line.
- > Resolutions from 8MP to 151MP
- > Multiple interfaces: GigE, USB3, CameraLink, 10GigE, CXP.
- > Based on High End CCD and CMOS image sensors.
- > Thermal Electronic Cooling(TEC) and fan options for better image performance



ON PYTHON/SONY IMX 5mp/8mp/8.9mp/12mp USB3.0/Camera link



ON PYTHON/SONY IMX/Kodak/Gpixel 25mp/29mp/31mp/43mp/50mp/150mp GigE/10GigE/Camera link/Coaxpress C Polytec



CH Series Cameras High-End

Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type
GigE					
MV-CH080-60GM/GC	8MP	3296 × 2472	5.5 µm	14 fps	Kodak KAI08051 4/3" CCD
MV-CH089-10GM/GC	8.9MP	4096 × 2160	3.45 µm	13 fps	Sony IMX267 1" CMOS
MV-CH120-10GM/GC	12MP	4096 × 3000	3.45 µm	9.4 fps	Sony IMX304 1.1" CMOS
MV-CH250-21GM	25MP	5120 × 5120	4.5 µm	4.64 fps	PYTHON25K 23*23mm CMOS
MV-CH250-90GM	25MP	5120 × 5120	2.5 µm	4.5 fps	Gpixel GMAX0505 1.1" CMOS
MV-CH290-60GM/GC MV-CH290-61GM	29MP	6576 × 4384	5.5 µm	4 fps	Kodak KAI29050 36*24mm CCD
MV-CH310-10GM	31MP	6464 × 4852	3.45 µm	3.9 fps	Sony IMX 342 24.9*16.6mm CMOS
USB3.0					
MV-CH050-10UM/UC/	5MP	2448 × 2048	3.45 µm	74 fps	Sony IMX250 2/3" CMOS
MV-CH089-10UM/UC	8.9MP	4096 × 2160	3.45 µm	32 fps	Sony IMX267 1" CMOS
MV-CH120-10UM/UC	12MP	4096 × 3000	3.45 µm	23 fps	Sony IMX304 1.1" CMOS



CH Series Cameras High-End

Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type	Shutter type
10GigE						
MV-CH120-10TM	12MP	4096 × 3000	3.45 µm	68 fps	Sony IMX253 1.1" CMOS	Global
MV-CH250-20TM/TC MV-CH250-21TM	25MP	5120 × 5120	4.5 µm	40 fps	PYTHON25K 23*23 mm CMOS	Global
CoaXPress						
MV-CH1510-10XM-M72- NF/TF	151MP	14208 × 10640	3.76 µm	6.2 fps	Sony IMX411 60.33*47.9mm CMOS	Rolling
MV-CH310-10XM-F-NF	31MP	6464 × 4852	3.45 µm	ADC 8bit mode: 17.9 fps ADC 12bit mode: 12.1 fps	Sony IMX 342 APS-C CMOS	Global
MV-CH430-90XM	43MP	7904 × 5432	2.8 µm	16.4 fps	gpixel GMAX0806 22.16*15.22mm CMOS	Global
CameraLink						
MV-CH050-10CM/CC	5MP	2432 × 2048	3.45 µm	140 fps	Sony IMX250 2/3" CMOS	Global
MV-CH290-60CM MV-CH290-61GM	29MP	6576 × 4384	5.5 µm	4.5 fps	OnSemi KAI-29050 36*24mm CCD	Global
MV-CH430-61CM-F-TF	43MP	8032 x 5360	4.5 µm	3.64 fps	Onsemi KAI-43140 36*24mm CCD	Global
MV-CH500-61CM-M58S-TF	50MP	10440 × 4800	4.5 µm	4 fps	OnSemi KAI-50140 46.98*21.6mm CCD	Global

C Polytec

CL Series Cameras

Features

- > Resolutions 2K~ 8K pixels per line
- GigE or CameraLink interface.
- > Automatic or manual exposure control
- > User defined ROI
- > Hardware and software trigger modes
- > PRNU and FPN corrections





GigE/Camera link



Camera link



CL Series Cameras Line Scan

Product Models

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Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type
GigE					
MV-CL020-40GM	2K	2048 x 1	7 µm	51 KHz	CMOS
MV-CL020-41GC	2K	2048 x 2	7 µm	26 KHz	CMOS
MV-CL021-40GM	2K	2048 x 1	7 µm	51 kHz	CMOS
MV-CL041-70GM	4K	4096 × 1	5 µm	29 kHz	CMOS
MV-CL042-70GC	4K	4096 × 2	5 µm	29 kHz	CMOS
CameraLink					
MV-CL041-70CM	4K	4096 x 1	5 µm	40 kHz	CMOS
MV-CL042-70CC	4K	4096 × 2	5 µm	40 kHz	CMOS
MV-CL082-70CM	8K	8192 x 2	5 µm	40 kHz	CMOS
MV-CL084-90CM MV-CL086-90CC	8K	8192 × 4 8192 × 6	5 µm	100 kHz 34kHz	CMOS



HIKROBOT Smart Camera





HIKROBOT Smart Camera

Product Models

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Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type
MV-SI600-37GM MV-SI600-38GM/C	1.3MP	1280×1024	4.8µm	80fps	PYTHON 1300 1/2" CMOS
MV-SI610-07GM MV-SI610-08GM	2MP	1280x1024	4.8µm	50fps	PYTHON 2000 2/3" CMOS
MV-SI620-37GM MV-SI620-38GM/C	5MP	2592×2048	4.8µm	30fps	PYTHON 5000 1" CMOS
MV-SI630-07GM MV-SI630-08GM /C	6MP	3072×2048	2.4µm	17fps	Sony IMX178 1/1.8" CMOS
MV-SI640-08GM	8.9MP	4096 x 2160	3.45 µm	30 fps	Sony IMX267 1" CMOS

Note:

- 07/37GM means without light source and lens cover
- 08/38GM means with light source and lens cover.

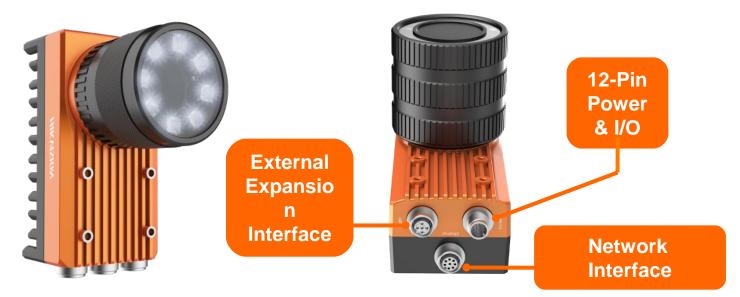




HIKROBOT Smart Camera

Product Features

- > Powerful performance based on top-ranking processor platform
- Embedded 64bit win7 operation system
- > Support third-party software to achieve the final function
- > Support external light, USB, VGA and RS232 communication with external expansion interface
- Multiple options on resolution: 1.3MP/2MP/5MP/6MP/8.9MP
- IP67 protection rating





HIKROBOT Vision Sensor

Features:

- Excellent performance, rich vision tools integrated
- > Web configuration, user-friendly interface
- Compact size, single cable connection design for easy installation
- Unique anti-reflective design to eliminate surface reflection
- Rich communication protocols and interfaces
 (Ethernet/IP, Modbus, TCP/UDP, FTP, serial port RS232/485)
- Widely used in consumer electronics, semiconductor, automotive and pharmaceutical industries.





HIKROBOT Vision Sensor

General Structure

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HIKROBOT Vision Sensor

Product Models

Model	Resolution	Pixel size	Frame rate	Sensor type	Function
MV-SC2004M-06S-WBN MV-SC2004M-12S-WBN MV-SC2004M-16S-WBN	0.4M (720 × 540)	6.9 µm	100 fps	1/2.9" CMOS Global shutter	 Feature matching Find line Blob Analysis Find circle Intensity measure
MV-SC2016M-06S-WBN MV-SC2016M-12S-WBN MV-SC2016M-16S-WBN	1.6M (1440 × 1080)	3.45 µm	60 fps	1/2.9" CMOS Global shutter	 Interval measure Contrast measure L2L measure

Note:

- -06S means 6mm focal length,-12S means 12.4mm focal length,- 16S means 14.8mm focal length;
- 2. WBN –w means white light, b means basic light, n means normal cover(optional polarizer cover);





HIKROBOT Smart Code Reader

Product Models

Overview

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Embedded with deep learning algorithm. Stronger Intelligence Analysis Ability.

Features

- High-performance algorithm combined with deep learning function easily handles the complex situation of dirty, defect, low contrast, etc.
- > Integrated LED indicator for debugging process and display performance
- > Optimized light source cup design ensures brightness uniformity
- > Updated fin-type case largely improves the heat dissipation performance
- > IP65 protection level, meeting the requirement of strict industrial environment

Mode	Resolution	No. of pixel	Pixel size	Frame rate	Sensor type
MV-ID3004M-06S-WBN MV-ID3004M-12S-WBN MV-ID3004M-15S-WBN	0.4MP	704 × 512	6.9 µm	50 fps	1/2.9" CMOS Global shutter
MV-ID3016M-06S-WBN MV-ID3016M-12S-WBN MV-ID3016M-15S-WBN	1.6MP	1408 × 1024	3.45 µm	20 fps	1/2.9" CMOS Global shutter





HIKROBOT 3D Camera



Overview

Cameras can export the depth data as well as the image information. Establish 3D model using the depth data.

Features

- Less influence by measured object surface texture and color
- Supports real-time output of 16-bit highresolution depth map data
- Supports various operating distances
- Provides various SDKs, supports access to various mainstream operating systems

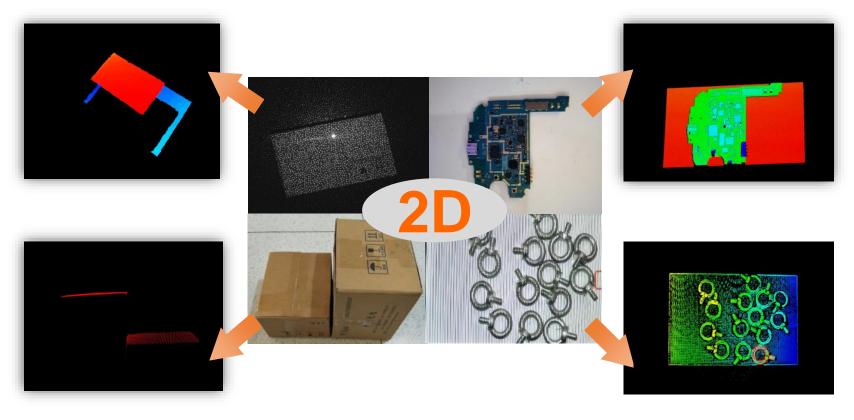
Application

- Volume measurement
- 3D mapping
- Robot guide
- Human-computer interaction
- Face recognition



HIKROBOT 3D Camera

Application Description and Display





HIKROBOT 3D Camera

Product Models



MV-DS135-06GM-L

- Integrated high-precision algorithms
- Apply NIR laser module, larger dynamic range
- Narrow band optical filter design, ambient light effectively restrained
- Support depth data or volume measurement data output



- High precision line laser, high stability
- High frame rate, stable profile
- Integrated design without moving parts
- IP65 protection level, adapted to harsh industrial environment



HIKROBOT Binocular 3D Camera

Product Models

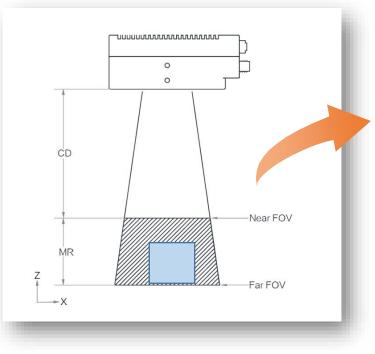
The binocular 3D camera can export the depth data as well as the image information. Establish 3D model using the depth data.

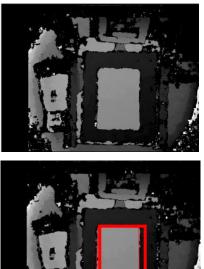
Specifications

- > Near FOV: 640mm x 540mm
- Far FOV: 1040mm x 840mm
- Clearance Distance (CD): 900mm
- Measurement Range (MR): **500mm**
- Detection Accuracy: 8mm

Application

- > 3D Mapping;
- Robot Guidance;
- Static volume measurement, etc.







HIKROBOT Line Laser 3D Camera

Product Models

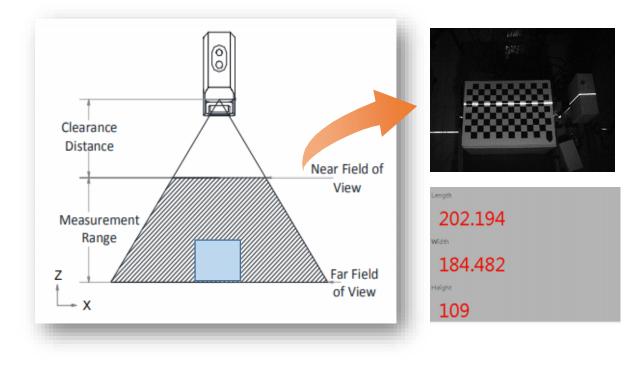
The line laser 3D camera adopts high precision line laser solution, which has a high collecting frame rate. It can be used for logistics measurement.

Specifications

- > Near FOV: 1000mm
- > Far FOV: 2235mm
- Clearance Distance(CD): 750mm
- Measurement Range(MR): 1000mm
- Scan rate: 200Hz@1m³ MR
- measurement accuracy: ±5mm

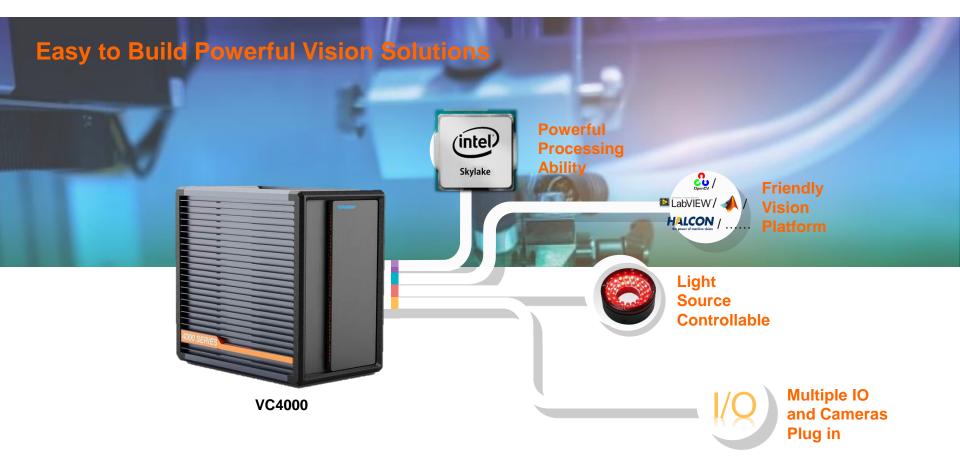
Application

Dynamic volume measurement in logistics





HIKROBOT Vision Controller



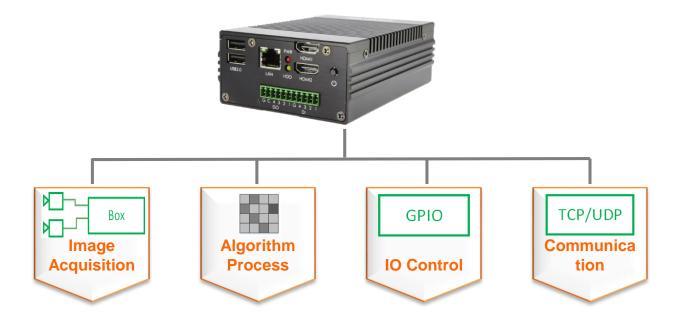


Product Models

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Hikvision Vision Box is Specially designed for Machine vision industry. It can be applied in image acquisition,

algorithm process, IO Control, communication etc.





Product Models

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The Vision Box contains **2 intel-chip GigE ports** with enhanced anti-surge design, ensure the machine vision camera stable access. And the USB3.0 interface of the vision box can connect to the USB3.0 camera.

Connect cameras directly through the Ethernet port

Maximum support for three gigabit cameras





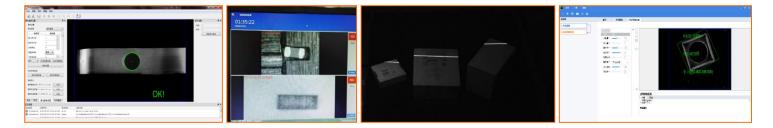
Product Models





Intel E3845, 1.91GHz CPU 🗲





Algorithm

The Vision Box can be Embedded with MV software and algorithm process, and complete algorithm operation and result output.



Product Models

4 GPIO

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- □ 4 inputs, which can connect camera IO, optoelectronic switch, etc.
- □ 4 outputs, which can connect PLC, relays, etc.





Connector (MV-VB2210-120G support)

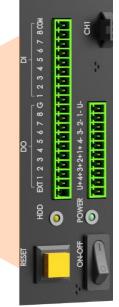
□ Voltage control, output voltage range: 0~24V DC, the maximum output power: 24W

□ It can support the power supply and brightness adjustment of single light source(Does not contain point light source, because point light source is controlled by current)



Integration feature





- > 8 Opto-isolated input
- > 8 NPN/PNP switchable Opto
 - isolated output
- I/O control via MCU which provides better real-time performance
- Support signal level reading and trigger interruption
- Provide C# configuration
 C++ SDK





Integration



HIKROBOT Industrial Lens



Overview

- Full series of fixed-focus lens products, HF Series (1/1.8" 6MP), KF series (1.1" 12MP), MF Series (2/3" 8MP), SA Series (4/3" 10MP), LF Series (large Image), focal length coverage 8mm~85mm.
- Comprehensive telecentric lens products, Standard Telecentric Lens Series and High-definition Telecentric Lens Series, magnification coverage 0.5~4.

Features

- Small structure
- High transmittance
- With macro effect
- Imaging effect in -40 ° C or 70 ° C environment is consistent with 25 ° C
- Image effect keep same before and after strong vibration test



HIKROBOT Industrial Lens

Product Models

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HIKROBOT Industrial Lens adopts high quality industrial design, including professional optical design, superior lens material and well-appointed test system. It has the characteristics of high resolution, high transmittance and low distortion. It is very suitable for the occasions of industrial automation and machine vision.





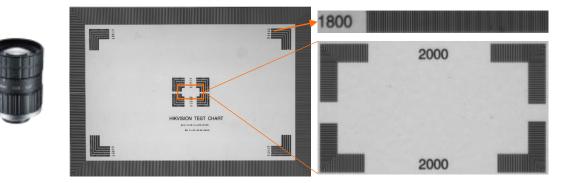
FA Lens

Telecentric Lens



HIKROBOT FA series Lens

Product Models



FA Lens

Features

- Low distortion
- ➢ High transmittance
- Compact structure
- Multi-layer broadband AR coating technology on the lens surface to ensure the high transmittance of visible light and NIR
- > Stable performance against vibration and temperature variation



HIKROBOT FA series Lens

Product Models







KF Series 1.1" 12MP f12--50mm

MF Series 2/3" 8MP f8--50mm



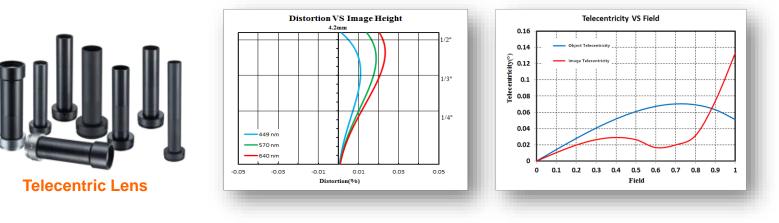


SA Series 4/3" 10MP f12--85mm



HIKROBOT Telecentrics Lens

Product Models



Features

- > Nearly zero distortion, suitable for high precision measurement and positioning
- High telecentricity
- High resolution and uniformity
- Magnification range covers 0.5X to 4X
- > Stable performance against vibration and temperature variation



HIKROBOT Products

Protocol Compatibility

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Industry standard Protocols :

















EVT C



Support 3rd party software:





HIKROBOT SDK

Protocol Compatibility

Hikvision industrial camera SDK is based on GenICam standard, compliant with GigE Vision and USB3 Vision standard, and can be used to control the connected industrial area cameras and line cameras, supporting camera image debugging and secondary development.

Key Features

- Users can use SDK API or MVS to debug camera image, acquire and set camera parameters
- Powerful GigE driver can improve the ability of transmitting and processing image with extremely low CPU resources
- USB3 driver fully supports USB3 Vision standard and ensure that the U3V camera transmits ultra-high-speed image data with USB3.0 bandwidth
- Rich API interfaces can be used to facilitate quick and effective secondary development
- Various sample programs, source code, and development documentation are provided for quick start
- Support further API encapsulation, plug-in, and other forms of customization

Supported Platforms	Supported Programing Languages	Supported IDE
Windows 32-bit/64-bit Linux 32bits/64bits	C C++ C# VB.NET Python	VC6.0 VS2008 and above QT XE5 BCB6.0

SDK can be downloaded freely by the official website <u>http://en.hikrobotics.com/service/soft.htm?type=1</u>



HIKROBOT MV Real Application

Scenario Introduction



Typical applications: measurement, guidance, information recognition, inspection, deep learning

Thank you !

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