

Spatial and Embodied Intelligence Suite

DexForce Product Selection Guide



DexForce Intelligent Manufacturing



Online Customer Service



TikTok

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All contents in this manual are subject to final interpretation by DexForce Technology Co., Ltd.

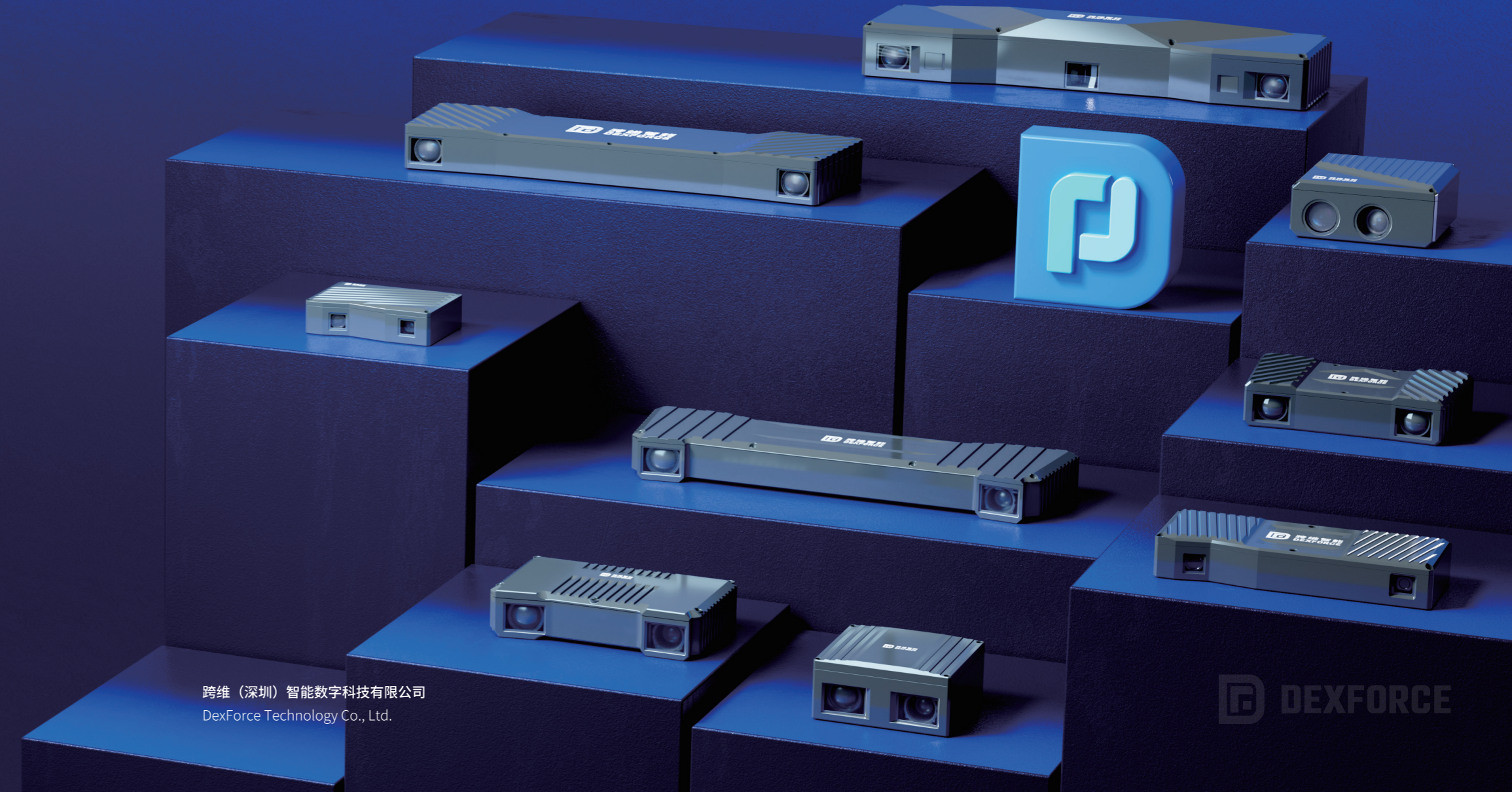
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Pioneer in Commercial Deployment of Embodied Intelligence

Provider of 3D Vision-Guided Solutions

Founded in June 2021, DexForce is a leading high-tech enterprise focused on Sim2Real-powered embodied intelligence for general purposes. Its core product, DexForce Spatial and Embodied Intelligence Suite (DexSense + PickWiz 3D), leverages high-precision perception and decision-making capabilities to deliver exceptional versatility and adaptability. It significantly improves operational efficiency and intelligence levels, and accelerates the large-scale adoption of embodied intelligence technology in the 3D vision-guided industry.

 4 Series of Products

 1000+ Projects

 99.9% Accuracy

 50+ Industries

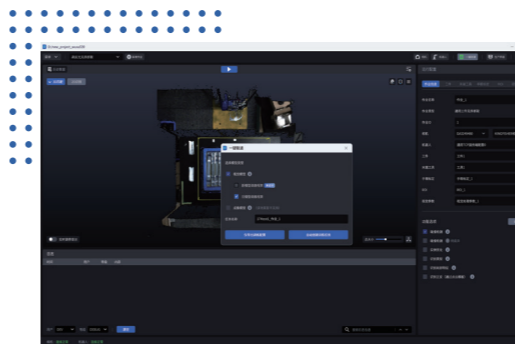
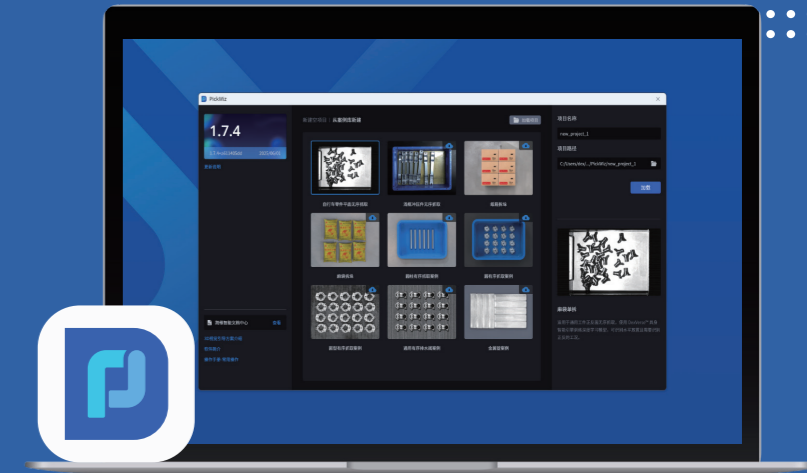


PickWiz

3D Vision-Guided Grasping and Robotic Manipulation Software

What is PickWiz?

As an in-house designed 3D vision-guided grasping software, PickWiz is customized for various industrial automation scenarios. It supports such applications as depalletizing, random bin picking, orderly loading and unloading, and precise single-target positioning.



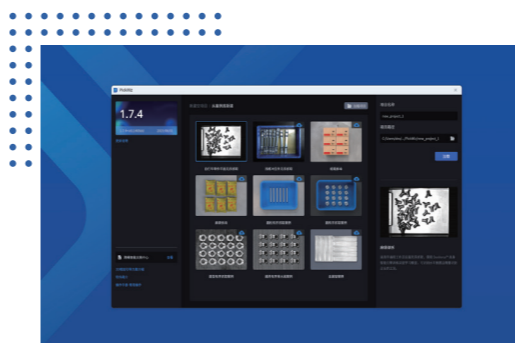
All-in-One Platform

PickWiz integrates comprehensive functions, including camera connectivity and parameter tuning, robot communication setup, hand-eye calibration, vision task selection, visual parameter adjustment, and historical data logging.



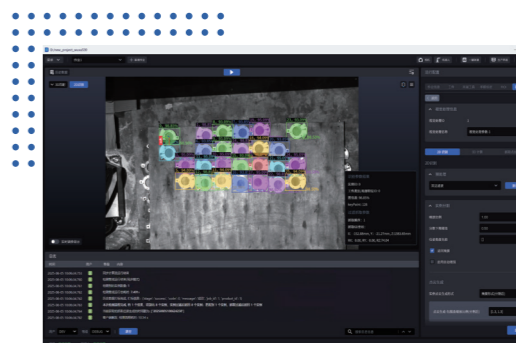
Zero-Code Programming

PickWiz builds vision workflows through hierarchical menus organized by scenario, workpiece properties, and vision recognition requirements.



Abundant Industrial Cases

PickWiz incorporates proven case studies from various industries, and offers extensive preset templates for one-click loading and rapid deployment.



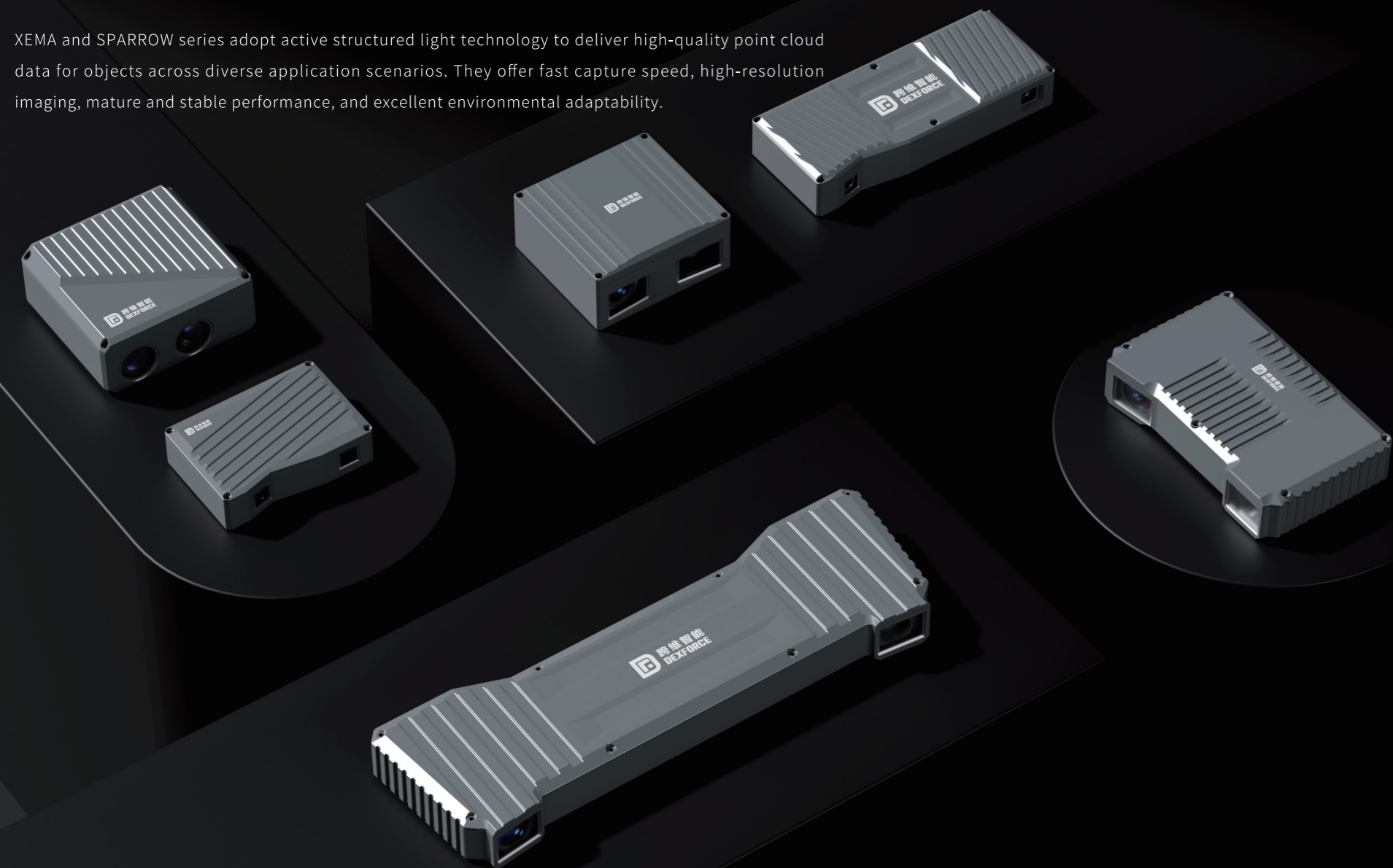
Advanced Vision Algorithms

PickWiz supports robot communication, 3D workpiece recognition and positioning, path planning, collision detection, and grasping strategy adjustments to meet diverse production needs.

DexSense Spatial and Embodied Intelligence Sensors

XEMA & SPARROW Series

XEMA and SPARROW series adopt active structured light technology to deliver high-quality point cloud data for objects across diverse application scenarios. They offer fast capture speed, high-resolution imaging, mature and stable performance, and excellent environmental adaptability.



Product Features

01 High-Precision 3D Imaging

Powered by in-house designed high-precision 3D imaging algorithms and HDR technology, the camera achieves a Z-axis measurement accuracy of up to 50 μ m at a working distance of 600mm. It meets the high standards of precision in industrial inspection applications.

02 Algorithm Development for Extreme Working Conditions

The dedicated exposure mode for highly reflective surfaces enhances the camera's measurement accuracy and stability.

The proprietary compensation algorithm minimizes depth measurement errors and mitigates the effect of surface texture on depth imaging.

03 Out-of-the-Box Edge Deployment

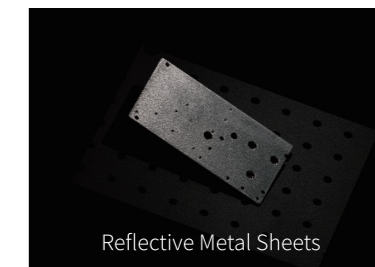
The computing platform does not occupy additional computing resources when calling DexSense SDK, realizing fast and stable performance.

The camera supports one-click connection to DexForce PickWiz 3D vision guidance software. It takes as little as 5 minutes to complete visual configurations and 20 minutes to perform debugging.

It also supports multi-language development and enables end users to develop a variety of customized automation applications.

Point Clouds

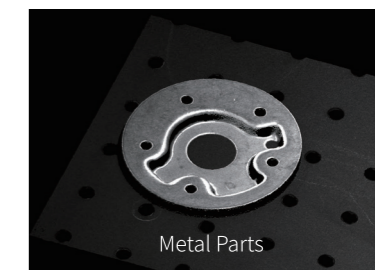
SPARROW Series



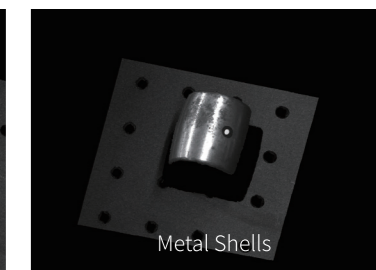
Reflective Metal Sheets



Cast Workpieces



Metal Parts

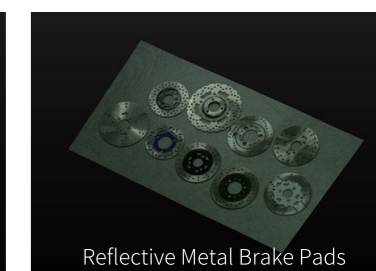


Metal Shells

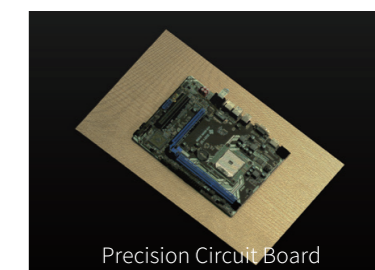
XEMA Series



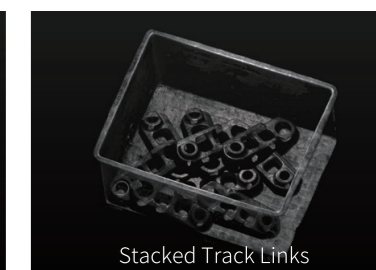
Automotive Parts



Reflective Metal Brake Pads



Precision Circuit Board



Stacked Track Links

DexSense Spatial and Embodied Intelligence Sensors

FINCH Series

The FINCH series employ laser as the light source to project high-energy and finely structured light. It addresses the long-standing challenge in the 3D vision field of balancing a large field of view with high precision. With its mature and stable performance, it is widely used in various high-end applications, including industrial inspection, automated production, robotic navigation, and scientific research.



Product Features

01 High Energy for Robust Light Resistance

Leveraging its high-energy laser, the FINCH series offer exceptional ambient light resistance to ensure clear imaging of black and highly reflective workpieces despite complex environments.

02 Large Field of View with Extended Depth of Field

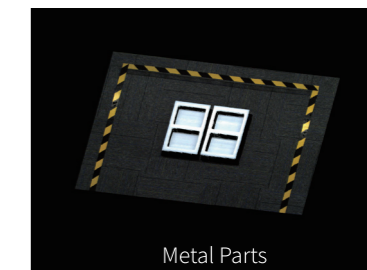
Compared with traditional cameras, laser-empowered cameras have larger depth of field to meet the customer's needs for wider field of view.

03 Edge Computing for Reduced Host Load

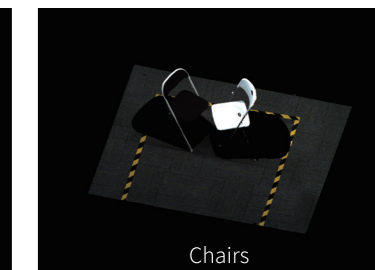
Powered by NVIDIA Jetson Nano module, the camera boasts built-in powerful computing capabilities to realize independent camera control and point cloud analysis for imaging. Compared with traditional cameras, it operates faster and more stably while freeing up the customer's host computing resources.

Point Clouds

FINCH Series



Metal Parts



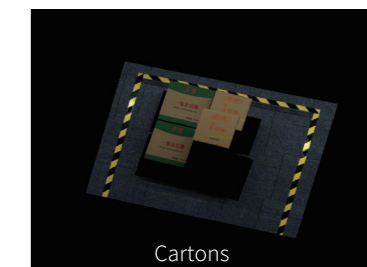
Chairs



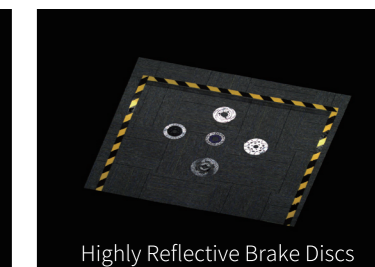
Sacks (Orderly Arranged)



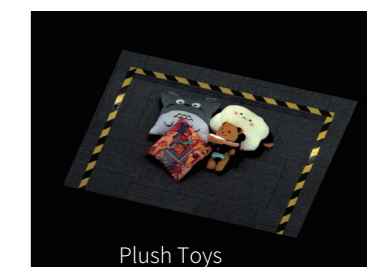
Sacks (Randomly Arranged)



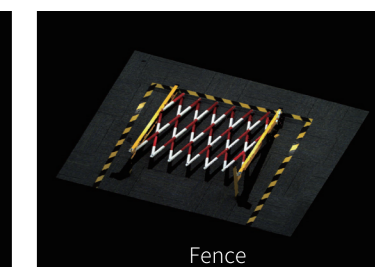
Cartons



Highly Reflective Brake Discs



Plush Toys



Fence

DexSense Spatial and Embodied Intelligence Sensors

KINGFISHER Series

Based on the DexVerse™ engine, combined with Sim2Real's application in binocular stereo imaging, DexForce has innovatively launched the KINGFISHER binocular stereo intelligent camera. It solves the imaging problem that traditional 3D cameras cannot handle, such as capturing data under strong ambient light.



Product Features

01 Resistant to Strong Light

The KINGFISHER binocular stereo intelligent camera utilizes two cameras to capture images from different angles. The innovative design enables the vision system to capture clear images and perform stably even in complex conditions like strong semi-outdoor lighting.

02 Fast Speed

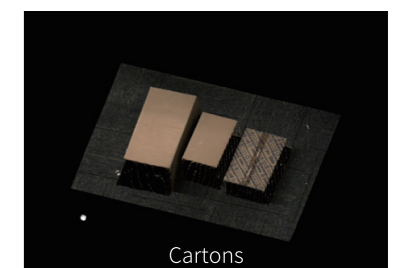
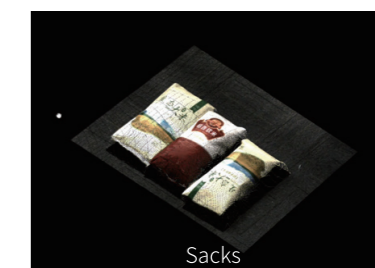
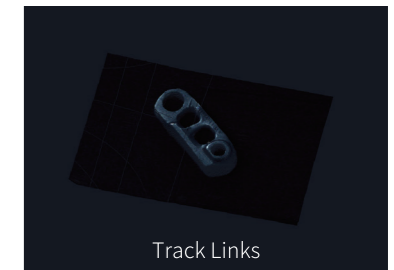
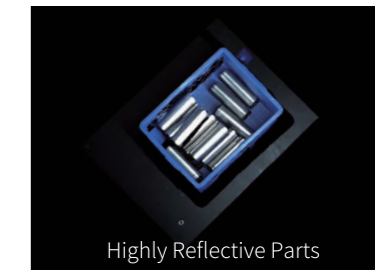
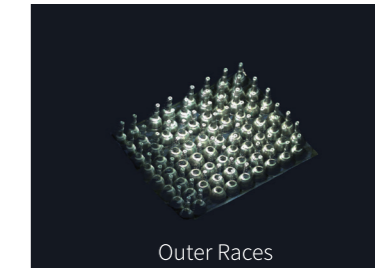
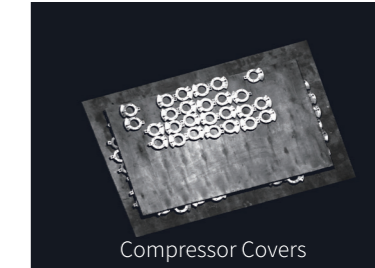
The KINGFISHER binocular stereo intelligent sensor accurately reconstructs a 3D point cloud of the scene in 0.5 seconds.

03 Open and Easy to Use

The camera can be quickly linked to PickWiz, the 3D vision guidance software. It leverages the DexVerse™ embodied intelligence engine to collect real-world data in real time and perform continuous cloud-based optimization of vision algorithms.

Point Clouds

KINGFISHER Series

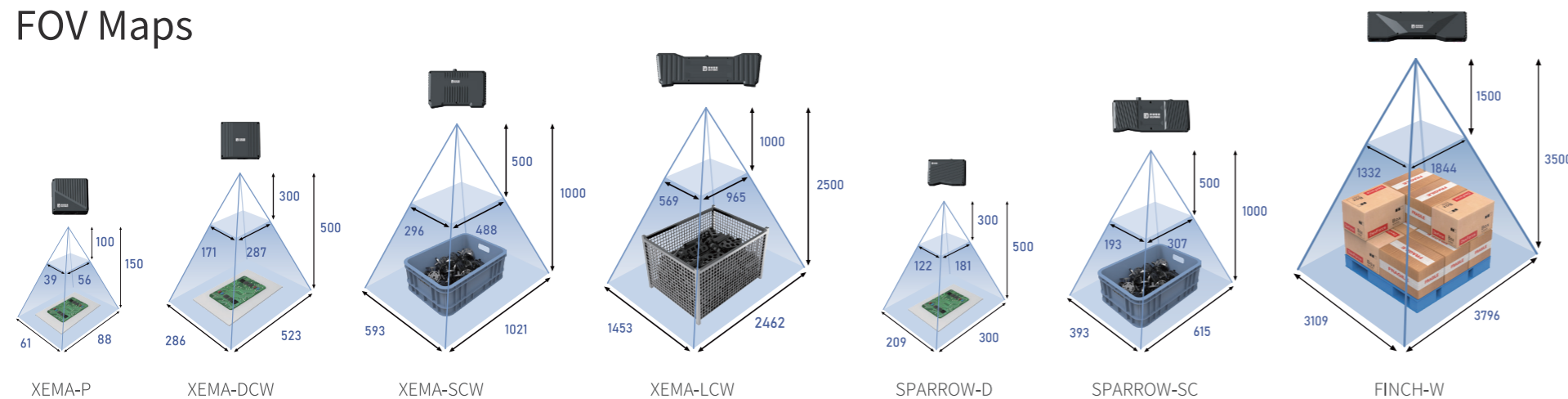


Specifications

XEMA & SPARROW & FINCH Series



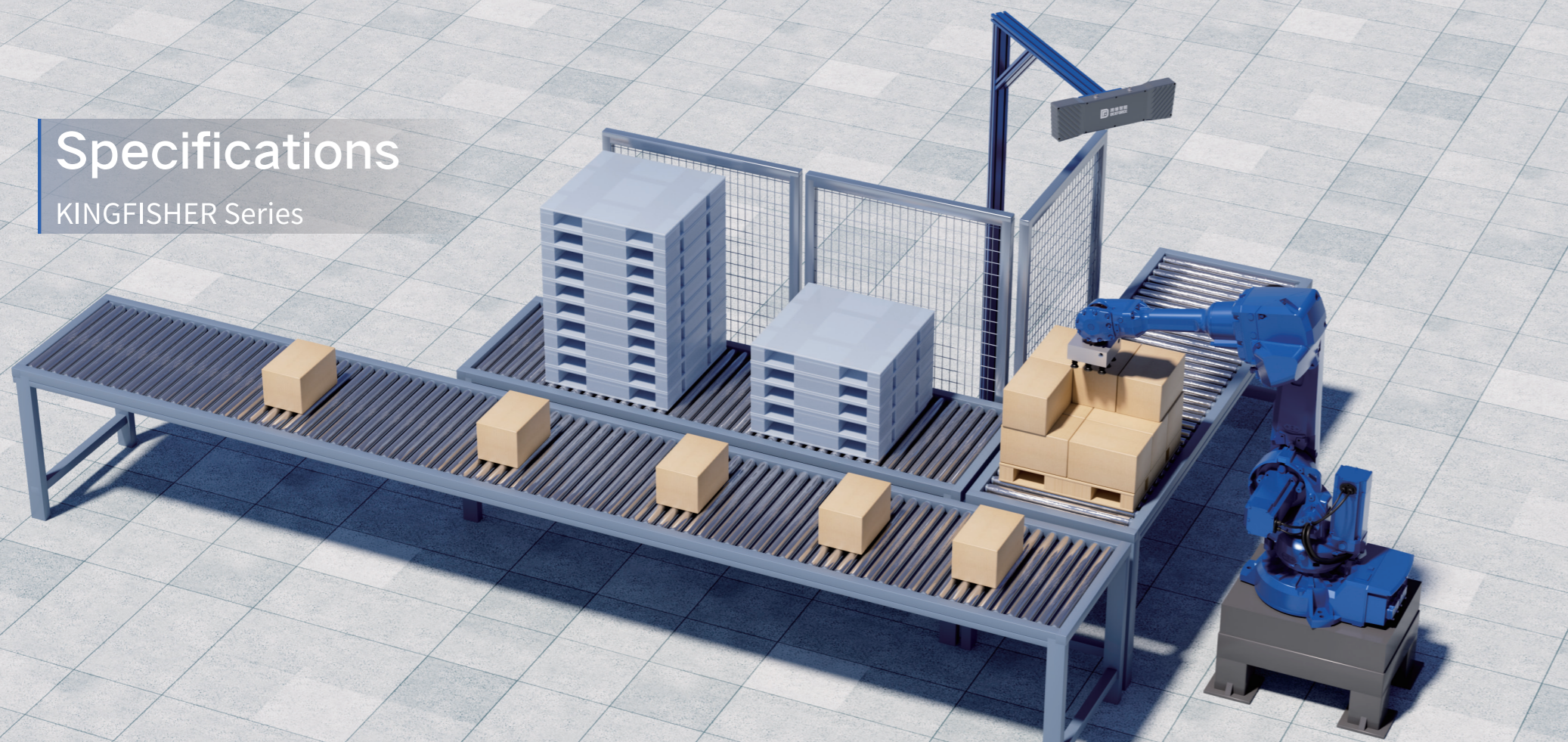
FOV Maps



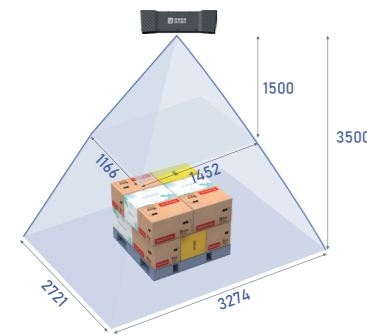
Model	XEMA-P	XEMA-DCW	XEMA-SCW	XEMA-LCW	SPARROW-D	SPARROW-SC	FINCH-W
Near FOV (mm)	56×39	287×171	488×296	965×569	181×122	307×193	1844×1332
Far FOV (mm)	88×61	523×286	1021×593	2462×1453	300×209	615×393	3796×3109
Recommended Working Distance (mm)	100 - 150	300 - 500	500 - 1000	1000 - 2500	300 - 500	500 - 1000	1500 - 3500
Z-axis Accuracy	6μm@0.1m	0.03mm@0.4m	0.05mm@0.8m	0.50mm@2.5m	0.05mm@0.4m	0.05mm@0.6m	0.65mm@3.0m
Z-axis Repeatability (μm)	1@0.10 - 0.15m	21@0.3 - 0.5m	41@0.5 - 1.0m	80@1.0 - 2.5m	18@0.3 - 0.5m	/	72 @1.5 - 3.5m
Pixel Pitch	22μm@0.10m 33μm@0.15m	0.16mm@0.3m 0.27mm@0.5m	0.27mm@0.5m 0.55mm@1.0m	0.55mm@1.0m 1.37mm@2.5m	0.13mm@0.3m 0.21mm@0.5m	0.2mm@0.5m 0.4mm@1m	Mono: 1.13mm@1.5m 2.63mm@3.5m Color: 0.93mm@1.5m 2.17mm@3.5m
Typical Acquisition Time	1.0 - 2.0s	0.5 - 1.5s	0.5 - 1.5s	0.5 - 1.5s	0.4 - 1.0s	0.4 - 1.0s	0.8 - 2.0s
Output Data	Point Cloud, Depth Map, Grayscale Image	Point Cloud, Depth Map, Color Image	Point Cloud, Depth Map, Color Image	Point Cloud, Depth Map, Color Image	Point Cloud, Depth Map, Grayscale Image	Point Cloud, Depth Map, Grayscale Image (Color Image)	Point Cloud, Depth Map, Grayscale Image (Color Image)
Operating System	Windows, Linux (Ubuntu20.04)	Windows, Linux (Ubuntu20.04)	Windows, Linux (Ubuntu20.04)	Windows, Linux (Ubuntu20.04)	Windows (CUDA>=11.0)	Windows (CUDA>=11.0)	Windows, Linux (Ubuntu20.04)
SDK API	C/C++/C#/python	C/C++/C#/python	C/C++/C#/python	C/C++/C#/python	C/C++/C#/python	C/C++/C#/python	C/C++/C#/python
Field Angle (H/V)	35°/26°	58°/33°	58°/35°	50°/33°	33°/23°	34°/22°	57°/48°
Dimensions (mm)	126×146×61	119×127×58	207×128×46	433×133×45	130×90×37	226×90×38	465×130×69
Weight (kg)	1.10	0.80	1.30	1.80	0.46	0.70	2.70
Baseline (mm)	70	80	145	350	75	170	400
Resolution (px)	2448×2048	1920×1200	1920×1200	1920×1200	1440×1080	1440×1080	Mono: 1624×1240 Color: 2272×1648
Interface Type	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet
Computing Unit	NVIDIA Jetson nano	NVIDIA Jetson nano	NVIDIA Jetson nano	NVIDIA Jetson nano	/	/	NVIDIA Jetson nano
Rated Voltage	DC 24V 3.2A	DC 24V 3.2A	DC 24V 3.2A	DC 24V 3.2A	DC 12V 6.3A	DC 12V 6.3A	DC24V ≥2A
Operating Temperature	-20 ~ 50°C	-20 ~ 40°C	-20 ~ 40°C	-20 ~ 40°C	-10 ~ 40°C	-10 ~ 40°C	-10 ~ 30°C
Certification	CE/FCC/RoHS	CE/FCC/RoHS	CE/FCC/RoHS	CE/FCC/RoHS	CE/FCC/RoHS	/	CE/FCC/RoHS
IP Rating	IP6X	IP6X	IP65	IP65	IP65	IP65	IP65

Specifications

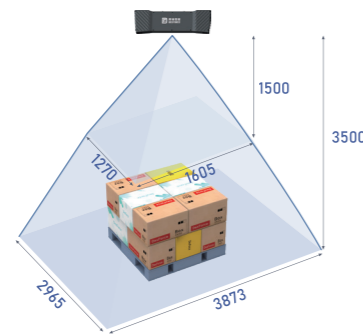
KINGFISHER Series



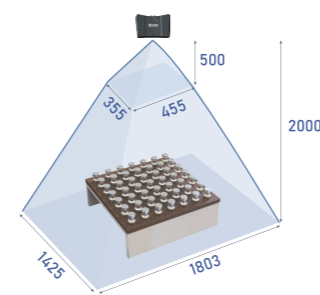
FOV Maps



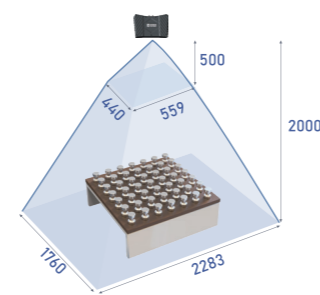
KINGFISHER-W-3003



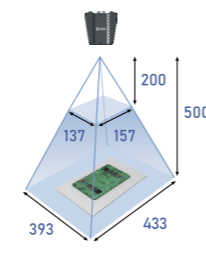
KINGFISHER-W-300W








KINGFISHER-S-1001



KINGFISHER-S-1201W

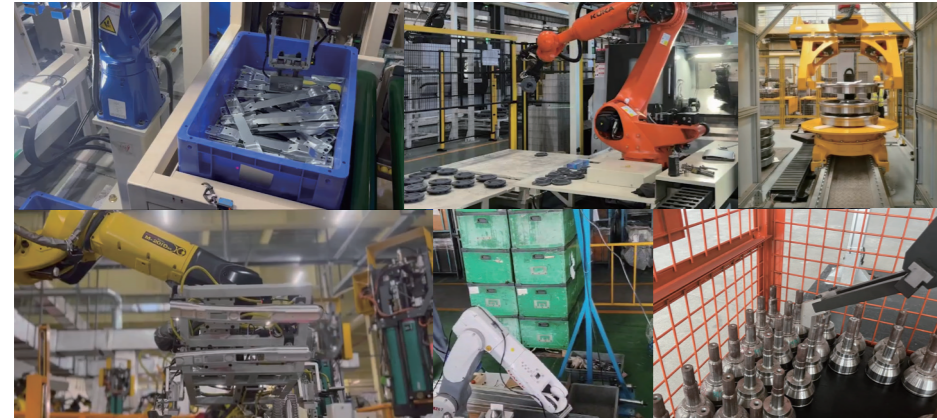


KINGFISHER-S-601

Model	KINGFISHER-W-3003	KINGFISHER -W-300W	KINGFISHER-S-1001	KINGFISHER-S-1201W	KINGFISHER-S-601
					
Technology Principle	AI Binocular Stereo Matching Algorithm	AI Binocular Stereo Matching Algorithm	AI Binocular Stereo Matching Algorithm	AI Binocular Stereo Matching Algorithm	AI Binocular Stereo Matching Algorithm
Light Source	Ambient Light	Ambient Light	Ambient Light	Ambient Light	Ambient Light
Baseline (mm)	400	400	150	150	60
Weight (kg)	1.5	1.5	1.0	1.0	1.1
Dimensions (mm)	457×129×48	457×129×48	209×134×46	209×134×46	155×145×60
Power Supply	POE	POE	POE	POE	POE
Interface	GigE	GigE	GigE	GigE	GigE
Network	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet
Field Angle (H/V)	50°/43° (H/V)	60°/45° (H/V)	48°/39° (H/V)	59°/47° (H/V)	46°/42° (H/V)
Resolution (px)	1280×1024	2048×1536	1280×1024	4024×3036	1280×1024
Recommended Working Distance (mm)	1500 - 3500	1500 - 3500	500 - 2000	500 - 2000	200 - 500
IP Rating	IP65	IP65	IP65	IP65	IP65
Near FOV (mm)	1452×1166	1605×1270	455×355	559×440	137×157
Far FOV (mm)	3274×2721	3873×2965	1803×1425	2283×1760	433×393
Repeatability(μm)	272	376	259	259	136
X/Y-axis Accuracy	1.13mm@1.5m 2.56mm@3.5m	0.84mm@1.5m 1.97mm@3.5m	0.35mm@0.5m 1.39mm@2.0m	0.14mm@0.5m 0.57mm@2.0m	0.14mm@0.2m 0.35mm@0.5m
Typical Acquisition Time	1s	1s	1s	1s	1s
Operating System	Windows 11	Windows 11	Windows 11	Windows 11	Windows 11
Output Image	Color Image, Depth Map, Point Cloud	Color Image, Depth Map, Point Cloud	Color Image, Depth Map, Point Cloud	Color Image, Depth Map, Point Cloud	Color Image, Depth Map, Point Cloud

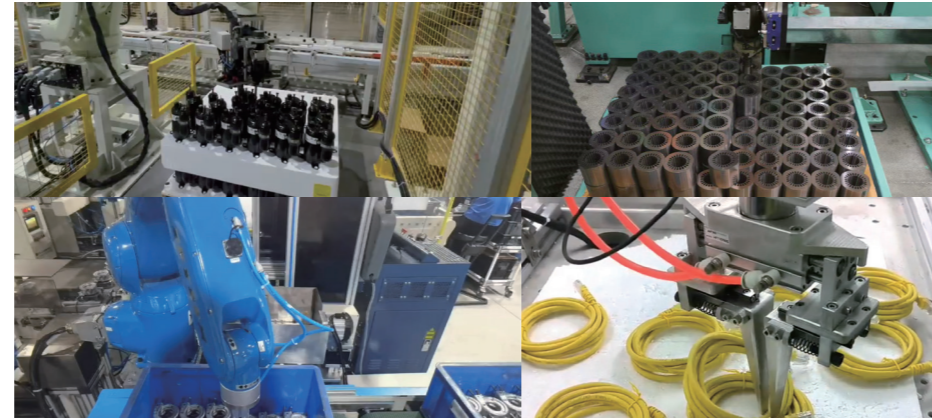
Successful Cases

More than 1000 projects implemented in over 30 industries



Automotive Industry

Positioning and Assembly | Parts Loading | Unloading and Framing



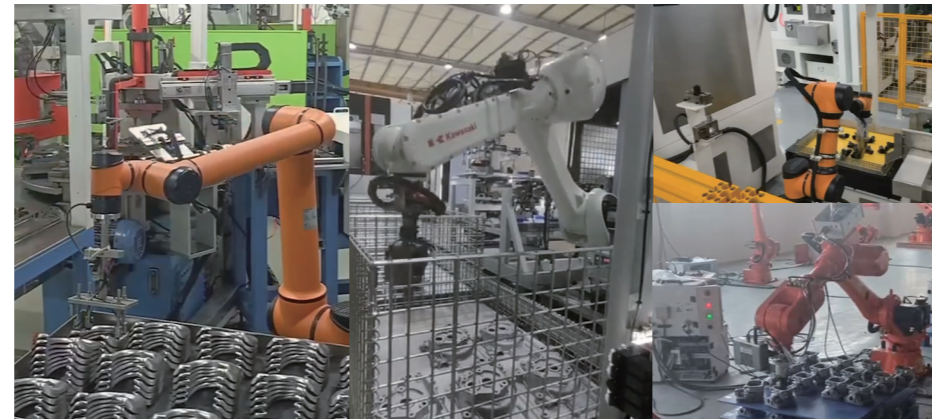
Home Appliance Industry

Positioning and Assembly | Parts Loading | Unloading and Framing



Logistics Industry

Carton Depalletizing | Sack Slitting | Medicine Box Sorting



General Industry

Loading of Non-Ferrous Ingots | Refractory Materials Loading | Sanitary Parts Loading

Breakthroughs

Proprietary cutting-edge algorithms and models to solve persistent industry challenges



Outdoor Applications

Making direct operation in outdoor/semi-outdoor environments a reality as the first solution provider



Transparent Workpieces

Providing the first solution deployed at scale for handling transparent objects



Highly Reflective Workpieces

Providing the solution widely applied in automotive and home appliance industries



Black and Reflective Workpieces

Supporting point cloud denoising and completion algorithms + deep learning models tailored for reflective objects