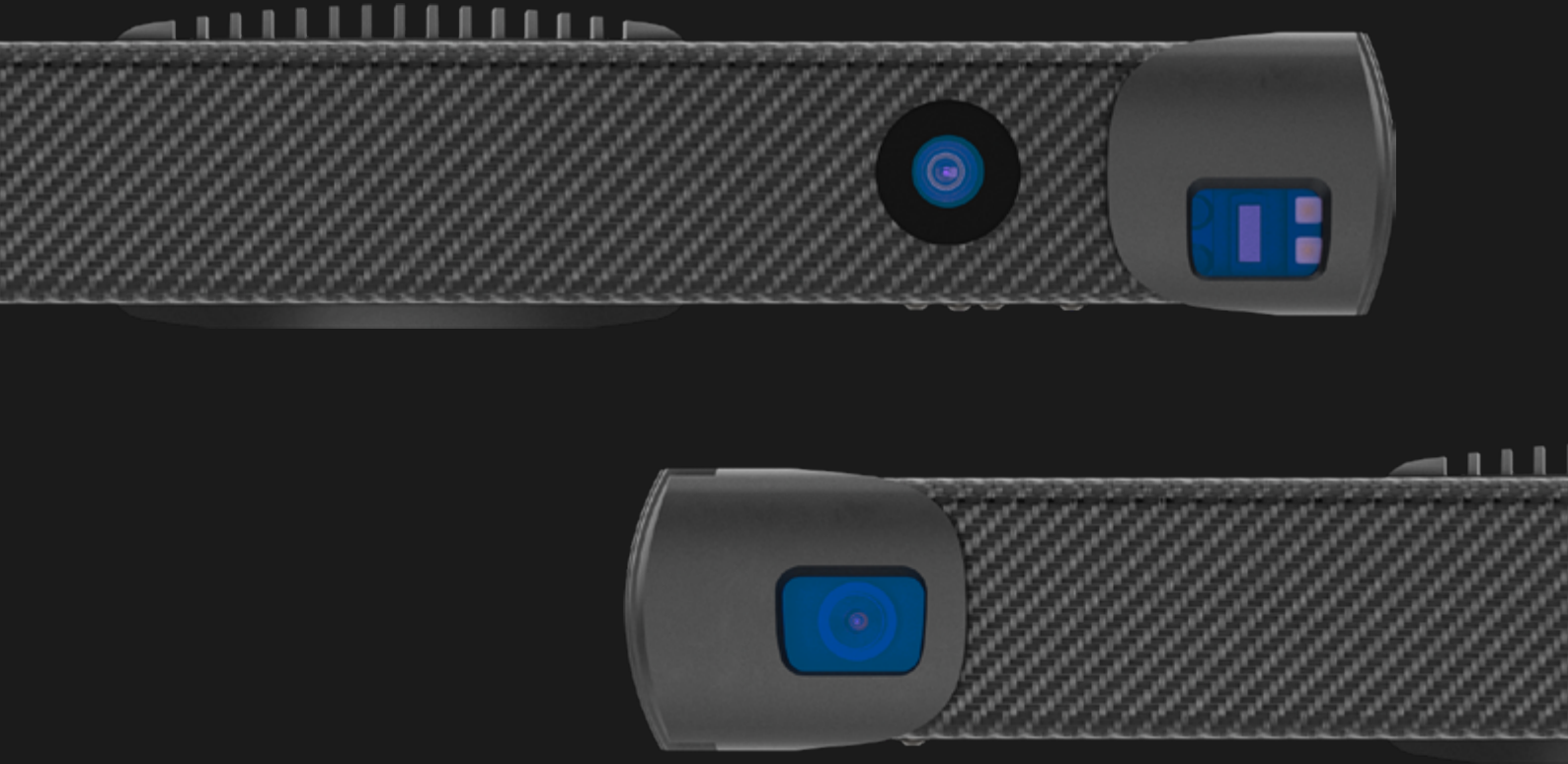


Photoneo



3D Vision & AI Robotics

For Smart Dynamic Automation

www.photoneo.com

Key Milestones

2016

PhoXi 3D Scanner launched.
A benchmark in quality, speed, and efficiency.

2018

Launched one of the world's first generic bin-picking systems, setting a new industry standard with a 7-second cycle time.

2020

Introduced the MotionCam-3D recognized globally for its unmatched ability to capture high-resolution 3D images of moving scenes.

2022

MotionCam-3D Color providing matching 3D and RGB data.
Launched AI object recognition for vision guided software.

USA Office

Photoneo Inc.
1830 Airport Exchange
Blvd I Suite 220
Erlanger, KY 41018
Kentucky

Europe Office

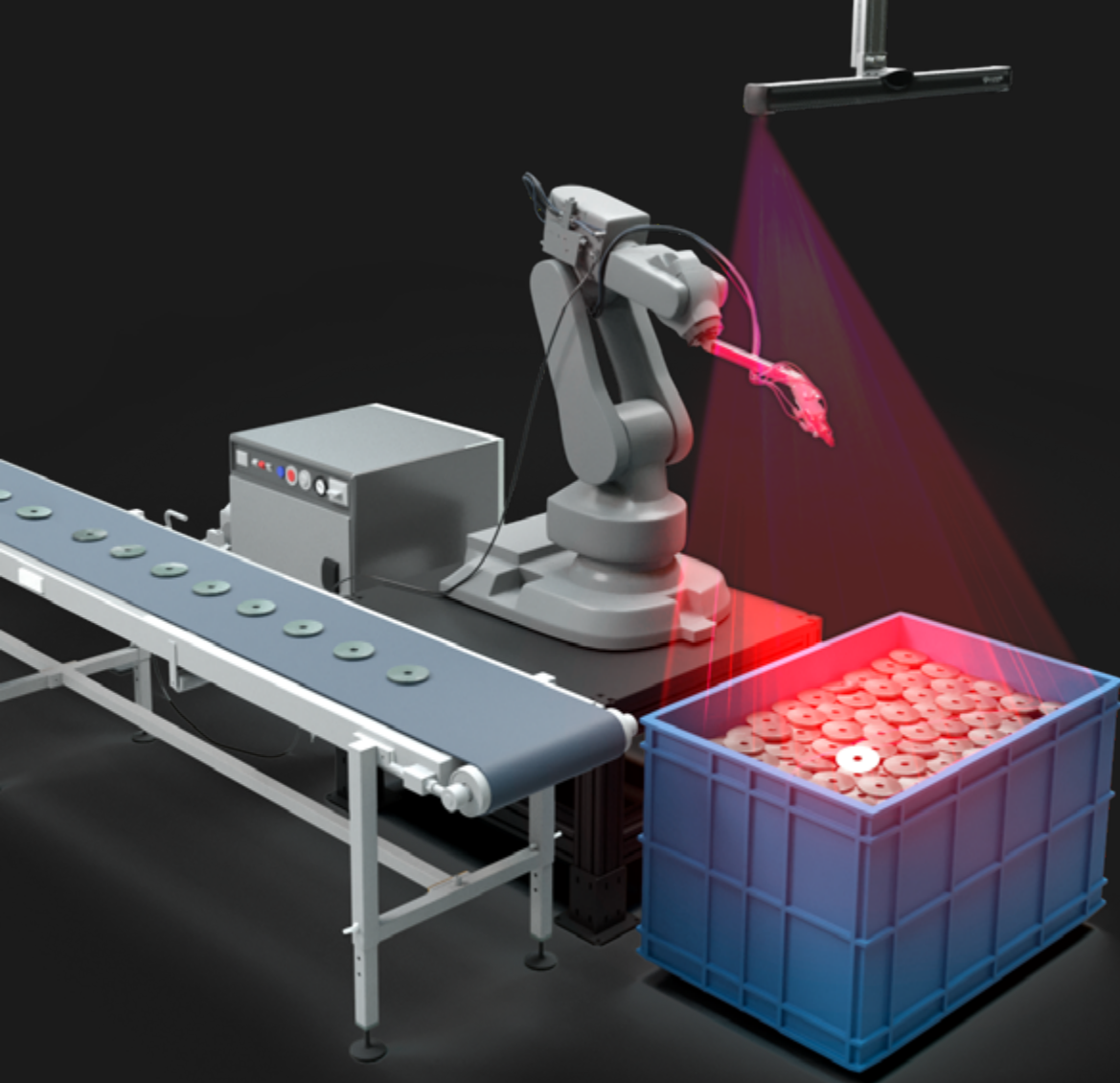
Photoneo s.r.o.
Plynarenska 6
82109 Bratislava
Slovakia

China Office

Photoneo
Room 706
No.917 Longhua East Road
Huangpu District
Shanghai 200023

Photoneo: Pioneering the Future of 3D Vision and Robotics

At Photoneo, we are committed to making 3D vision and robotics as intuitive and capable as human vision. To replicate human abilities in object recognition and manipulation with precision, speed, and simplicity—offering cost-effective solutions that ensure a quick return on investment.



Leading the Way in **3D Vision** and **Automation**

Photoneo is a global leader in 3D vision technology and AI-powered robotics. Backed by a team of over 120 professionals, Photoneo has completed more than 8,500 installations across diverse industries.

Choosing Photoneo means 3D vision and AI robotics ready to elevate your production capabilities.

Precision and Efficiency

Photoneo advanced 3D vision technology ensures exceptional precision and efficiency. For manufacturers, and system integrators alike, this means access to reliable, high-performance solutions that minimize errors and enhance operational accuracy across various applications.

Versatile Scalable Solutions Across Industries

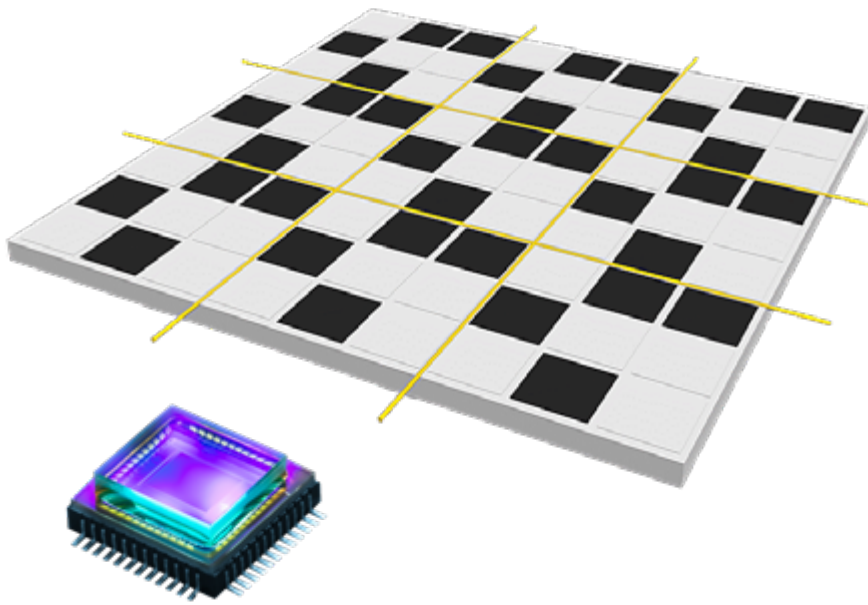
Photoneo technology is designed to meet diverse industrial needs, from handling small components to managing large and irregularly shaped objects. Its versatility ensures that your systems can deliver consistent precision and efficiency at scale, no matter the application or industry.

Flexible and Adaptive Technology

Photoneo 3D vision systems are built to adapt seamlessly to changes in product types, packaging, or operational requirements. This flexibility ensures that your solutions remain efficient and effective, even as client needs evolve, providing lasting value and consistent performance across all projects. Our unique, patented Parallel Structured Light technology provides high-accuracy and high-resolution 3D data for dynamic scenes, opening up new frontiers for industrial automation. Thanks to the Award-Winning Ambient Light Suppression (ALS) technology, Photoneo Sensors effortlessly capture both the darkest and brightest areas in a single scan, even in environments with irregular or changing indoor lighting.

Award-Winning Technology





Parallel Structured Light

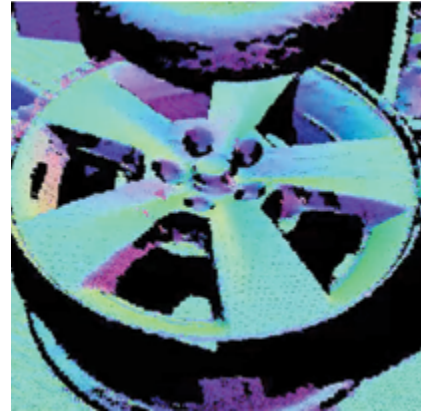
Our unique patented technology provides high-accuracy and high-resolution 3D data for dynamic scenes, opening up new frontiers for industrial automation. It's like having multiple parallel cameras in a single camera body!

Existing area depth-sensing technologies can provide either fast data acquisition at low quality (Time of Flight, Active Stereo) or high-quality data but for static scenes only (Sequential Structured Light). Photoneo novel depth-sensing approach called Parallel Structured Light based on COMPIS combines both benefits: high quality at speed - ability to scan dynamic scenes moving at up to 40 m/s speed. Robots no longer need to stop to acquire data or manipulate randomly moving objects.

At the heart of the technology is Photoneo unique patented Computational CMOS Sensor that allows acquisition of multiple different snapshot images via Mosaic Shutter Technology.



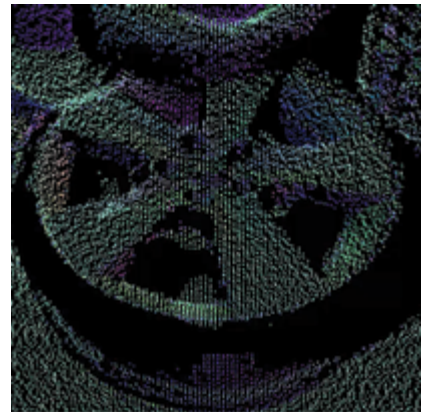
Snapshot of a moving scene



Speed: 5/5 Quality: 5/5

Parallel Structured Light

High quality in motion or static



Speed: 5/5 Quality: 1/5

Time of Flight / Active Stereo

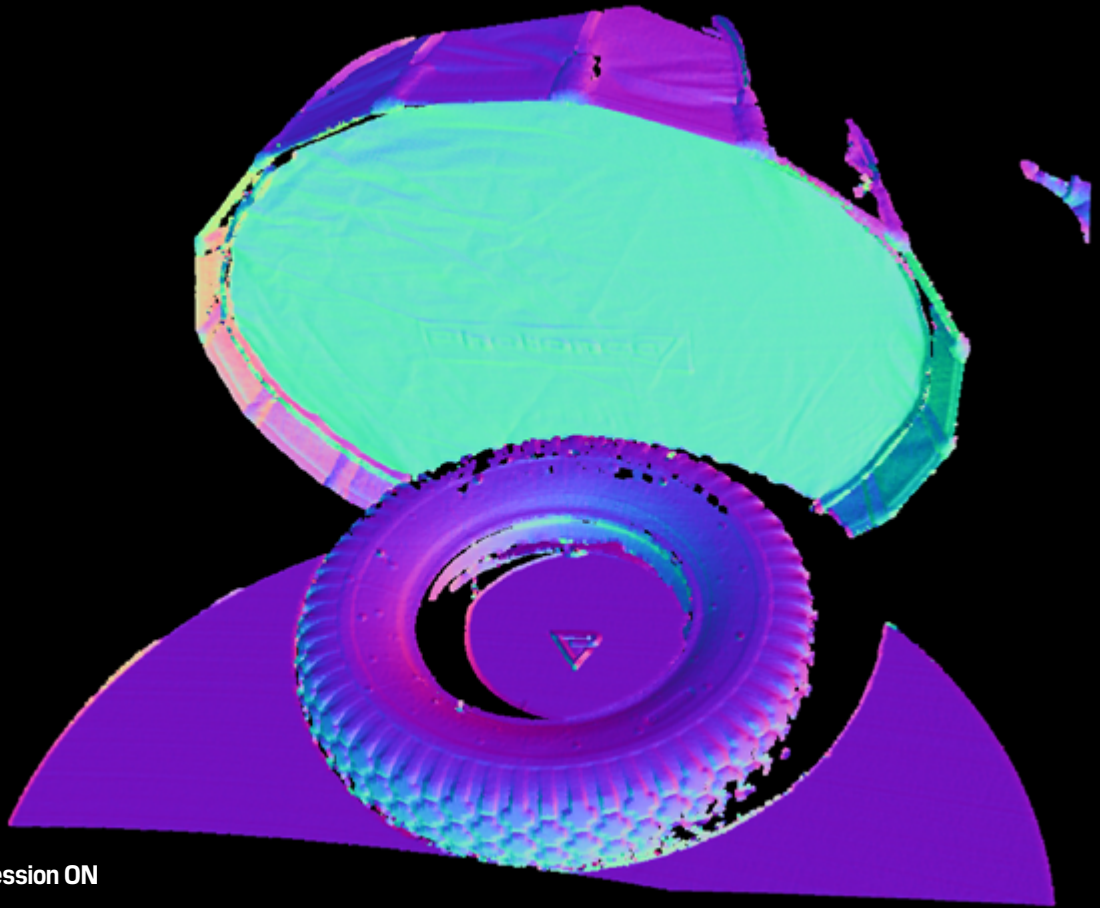
Low quality in motion or static



Speed: 1/5 Quality: 5/5

Sequential Structured Light

Motion artifacts, high quality static (slow)

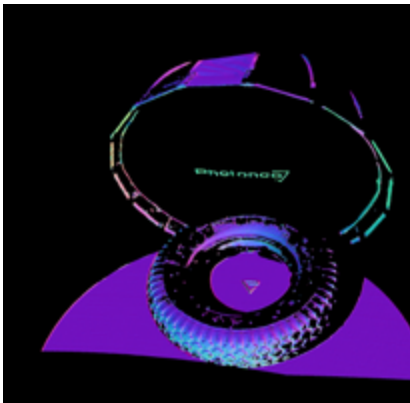


Ambient Light Suppression ON

Scanning time: 3.5s

Ambient Light Suppression OFF

Scanning time: 1.2s



Real Photo

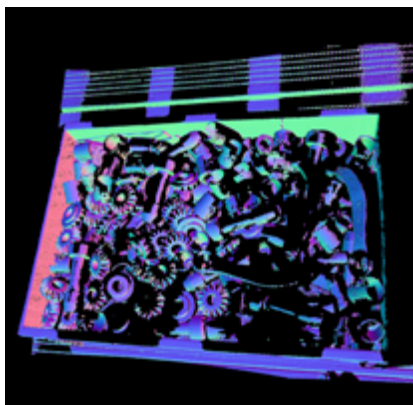


Ambient Light Suppression

Photoneo 3rd generation Ambient Light Suppression (ALS) technology redefines what's possible in 3D scanning. By actively suppressing the effects of strong ambient light without increasing the projector light intensity, it enables reliable scans in any lighting condition.

Even on a sunny day with light intensity up to 100,000 lux, Photoneo Sensors effortlessly capture both the darkest and brightest areas in a single scan, making it ideal for environments with irregular or changing indoor lighting.

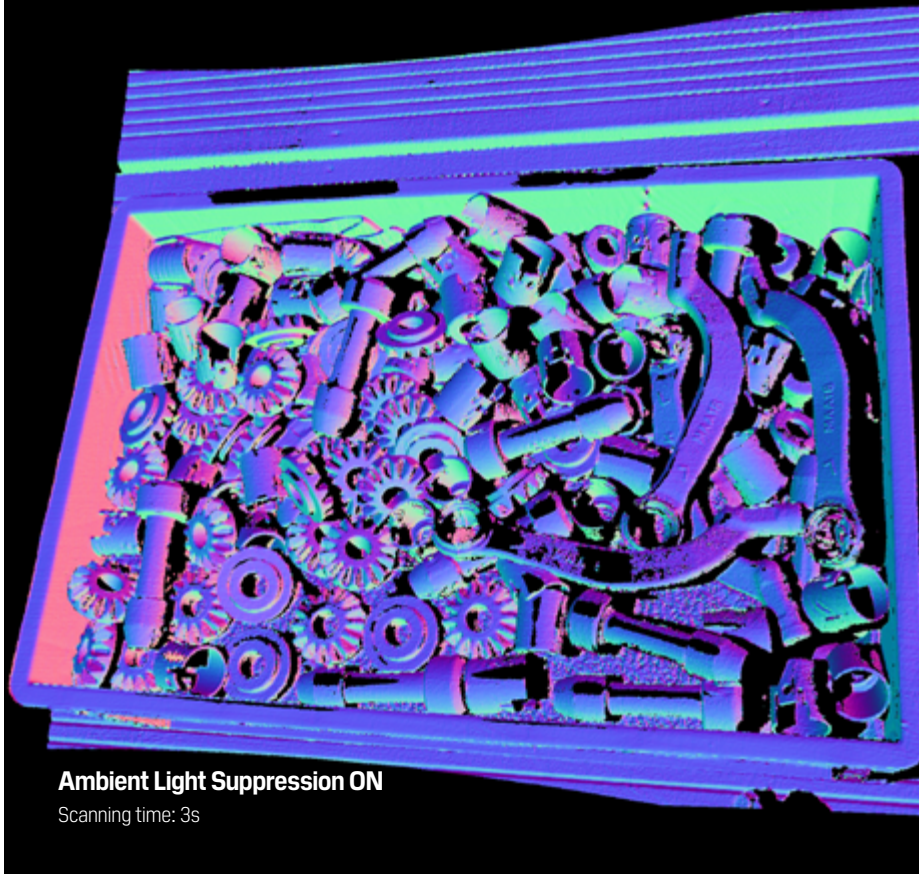
Ambient Light Suppression OFF
Scanning time: 1.2s



Real Photo

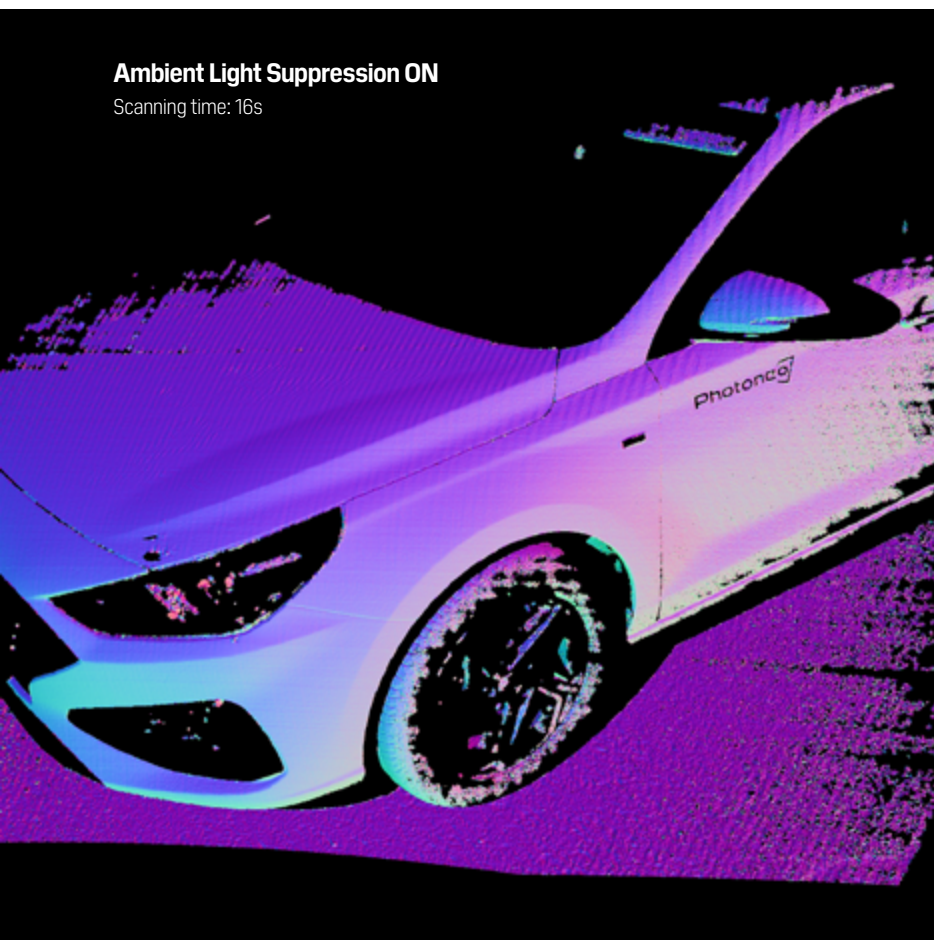


Ambient Light Suppression ON
Scanning time: 3s

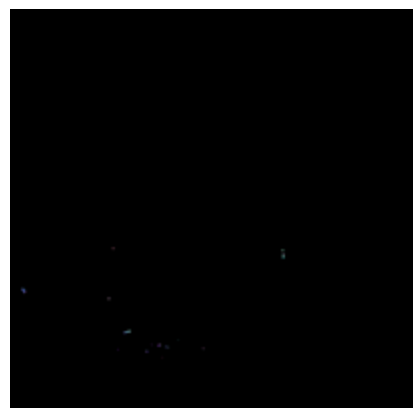


Shadows and shadow-like patterns are no longer obstacles, ensuring consistent and precise results even for large, glossy, or dark objects speed.

Ambient Light Suppression ON
Scanning time: 16s



Ambient Light Suppression OFF
Scanning time: 1.2s



Real Photo





Worldwide Partner Network

Ensuring Solution Excellence

Photoneo success is built on strong partnerships with leading robot system integrators, vision system integrators, and a network of 50+ distributors worldwide. These collaborations ensure that every solution meets the highest standards of quality and performance.

The ABB logo is displayed in a bold, red, sans-serif font.The TM ROBOT logo features the letters 'TM' in a stylized, blocky font with a green-to-blue gradient, and the word 'ROBOT' in a smaller, white, sans-serif font below it.

kassow robots

DOOSAN

YASKAWA

The UNIVERSAL ROBOTS logo consists of a blue square icon with a white 'UR' monogram, followed by the words 'UNIVERSAL' and 'ROBOTS' in a blue, sans-serif font.The Kawasaki Robotics logo features a red square icon with a white 'K' monogram, followed by the words 'Kawasaki' and 'Robotics' in a red, sans-serif font.

OMRON

Trusted by the World's Leading Robotic Brands

Trusted by top robotic brands like ABB, Yaskawa, Techman, Universal Robots, Kassow Robots, Doosan, Omron, and Kawasaki Robotics, Photoneo is committed to innovation and delivering cutting-edge automation technology.



Product Portfolio

3D Vision

Hardware Sensors

Product Families

- MotionCam-3D
- PhoXi 3D Scanner
- Alpha 3D Scanner

Automation Solutions for Vision-Guided Robotics

AI + Software + Hardware

Applications

- Picking and placing items from bins, conveyors, pallets
- Depalletization
- Delayering

Digital Twinning

3D Software

Applications

- Automated 3D model creation
- Gantry setup with multiple devices
- On a rotary table
- On a robotic arm or handheld
- Custom / manual with aligning tool (marker pattern)

3D Vision

3D Sensors for Any Task

Photoneo 3D Sensors have been designed with high quality as well as variability in mind to cover all kinds of application needs and requirements. Whether you need to 3D scan static scenes or random motion, simple or complex scenes, or objects the size of an orange or that of a large shipping container – nothing is a challenge for Photoneo 3D Sensors. Our PhoXi 3D Scanners and MotionCam-3D cameras provide perfect resolution and accuracy across a wide scanning range – just pick a device that best suits your needs.

**Capturing moving objects
without motion blur
up to 40 m/s**

**Up to 3.2 million points
for the most demanding
vision tasks**

**Large scanning volumes for
robotics at scale**

Sensor	Vision	Applications	Best for
MotionCam-3D Color High-end	Static or Dynamic scenes	<ul style="list-style-type: none"> → Delayering → Object handling → AI Bin Picking → Depalletization → Conveyor Picking → Dimensioning → Digital Twinning → Inspection 	<ul style="list-style-type: none"> → AI inference on color → Automated 3D model creation of large objects
MotionCam-3D High-end	Static or Dynamic scenes	<ul style="list-style-type: none"> → Delayering → Object handling → AI Bin Picking → Depalletization → Conveyor Picking → Dimensioning 	<ul style="list-style-type: none"> → Time-critical applications → Unique for high accuracy in motion
PhoXi 3D Scanner High-end	Static scenes	<ul style="list-style-type: none"> → Delayering → Object handling → AI Bin Picking → Depalletization 	<ul style="list-style-type: none"> → Accurate robot guidance → Large scanning volumes → Thin objects → Challenging materials
Alpha 3D Scanner Mid-range	Static scenes	<ul style="list-style-type: none"> → Delayering → Object handling 	<ul style="list-style-type: none"> → Simple robotics → Large objects → Medium accuracy

Scan 0

Gallery

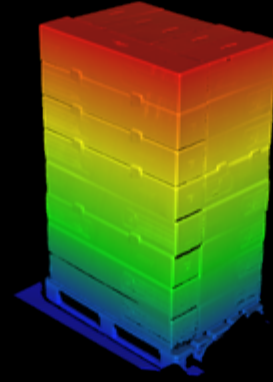
Large Scanning Volumes

Scanning volume of up to 2 euro pallets, fast acquisition and high-quality scanning of any objects up to 4 meters. Available with MotionCam-3D L and L+, Alpha 3D Scanner XL and PhoXi 3D Scanner L, XL.

Cardboards

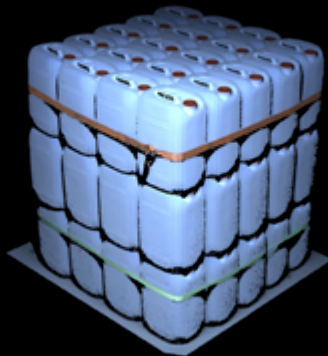


RGB texture

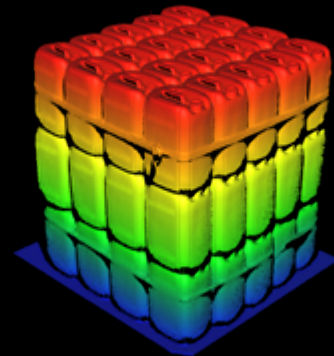


Depth map

Water canisters

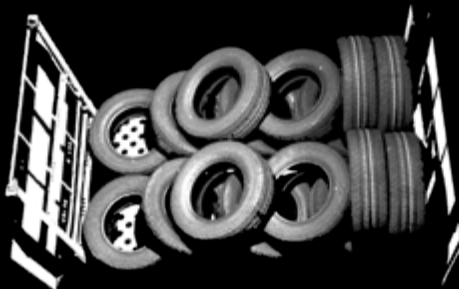


RGB texture

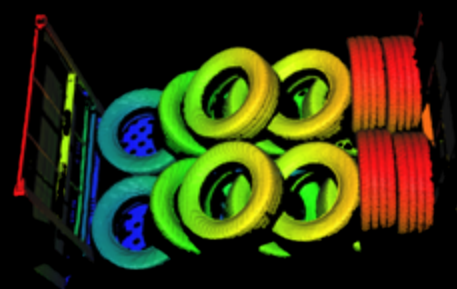


Depth map

Black tires



RGB texture



Depth map

Transparent Objects

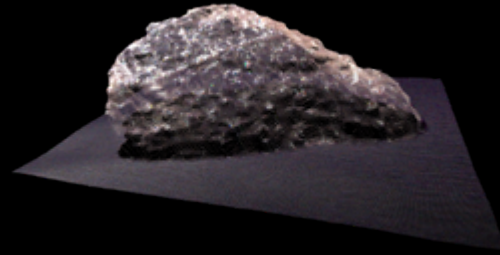
E-commerce items are often wrapped in transparent plastic foils. Available with MotionCam-3D.



Plastic bottles



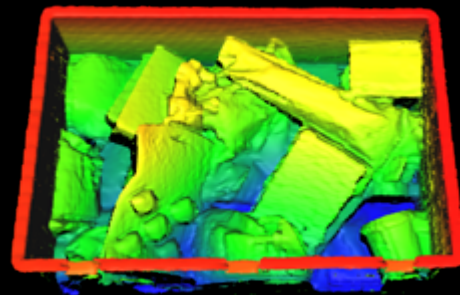
Medical items



Objects in bubble wraps



RGB texture



Depth map

Grocery bin

Settings Assistant

Settings Assistant determines the best scanning parameters for optimal data quality, eliminating the need for complex knowledge. Available with MotionCam-3D, PhoXi-3D Scanner and Alpha 3D Scanner.



Before



After

Bin with various objects

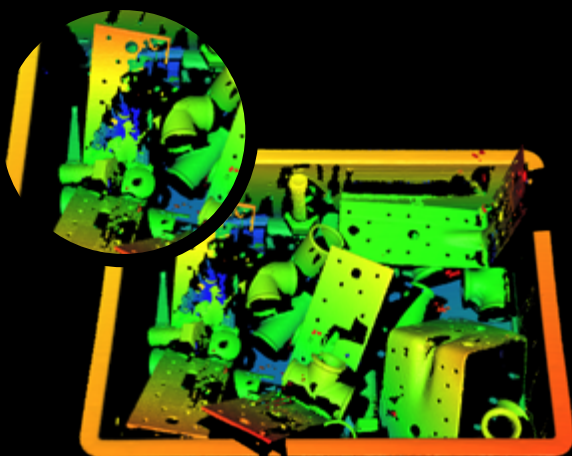
Shiny Metallic Objects

L and U-shaped metal objects present a traditional challenge for active illumination 3D cameras due to interreflections of projected light. Photoneo's advanced reflection suppression provides superior results in creating complete point clouds even for challenging scenes.

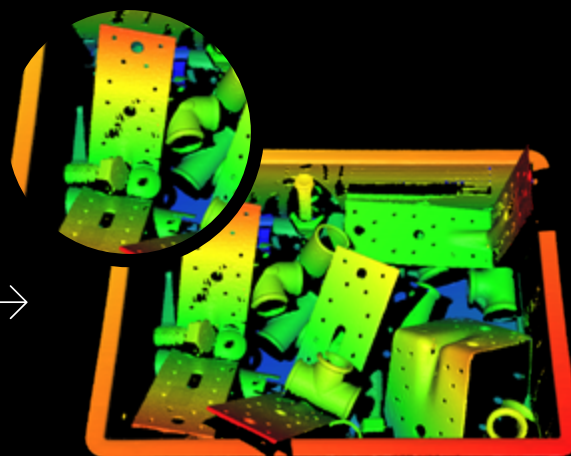


Original photo

Bin with various metal parts



A scene with strong interreflection which is causing incomplete data and noise.



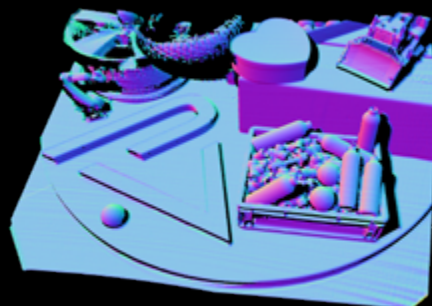
Scan with the latest reflection suppression provides complete data.

Output formats from MotionCam-3D Color

2D RGB data are available individually and mapped to the 3D data. Other 2D data include confidence and timestamp. Note: All data are processed on the device.



3D Data - Point cloud



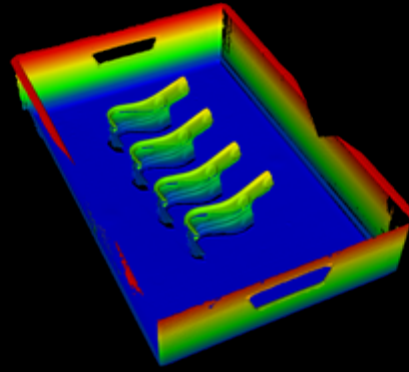
3D Data - Normals

Multiview Feature

270-degree 3D scan created from multiple scans from different perspectives. Especially useful for thin metallic objects. In combination with superior metallic object scanning, this approach guarantees the most robust data for collision avoidance.

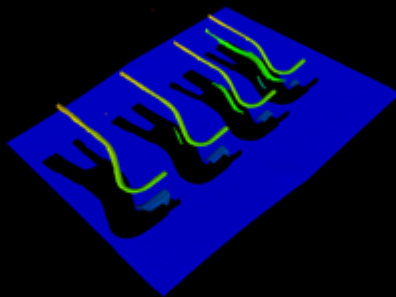


RGB texture

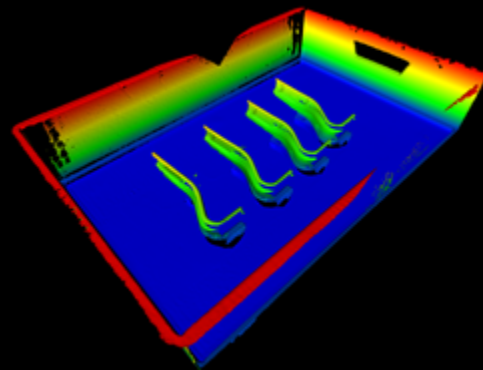


Depth map

L-shaped metallic parts



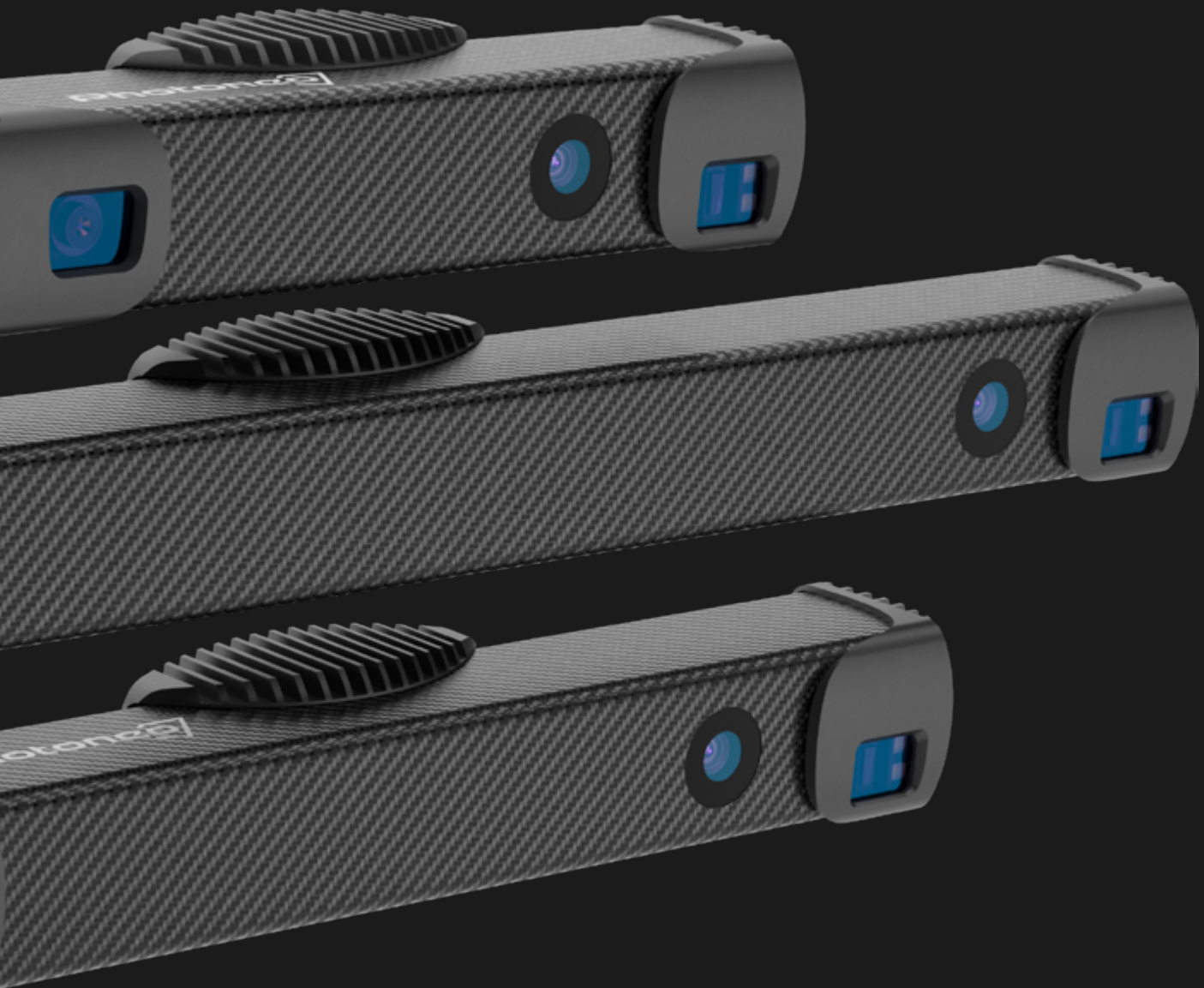
Scanning from a single perspective cannot provide complete 3D information because of occlusions.



Combining multiple 3D scans in real time produces complete 3D data.



Multiview feature is powered by Photoneo 3D Meshing



MotionCam-3D

Fastest 3D Camera on the Market

Real-Time 3D Vision: Precise 3D Data Even in Motion

MotionCam-3D is the only 3D vision solution that provides high-resolution, accurate 3D data without halting your operations. Perfect for industries like automotive, manufacturing, and logistics, where speed and precision are critical.

Automotive

MotionCam-3D accelerates data acquisition (up to 5x faster) for bin picking, underbody inspections, and end-of-assembly checks—without slowing down the line.

Manufacturing

Perform real-time robotic guidance, object sorting, and quality inspections on the fly, reducing cycle times by up to 2 seconds per scan.

Logistics

Improve order fulfillment, palletizing, and depalletizing by capturing real-time 3D data of moving objects, ensuring smooth handling and sorting without interruptions.

* Compared to traditional Sequential Structured Light 3D Scanner

**The Only
3D Vision
Solution That
Keeps Up with
Your Process**



**Up to 5x faster data
acquisition ***



**Cycle time decreased by
up to 2 seconds thanks
to 3D data acquisition in
motion**



**The throughput of
applications increased
up to 2,5 times**



**RGB mapping on depth
data enables AI data
processing**

Learn more about

Main Benefits

Versatile Across
Applications

Specifications

1.

Dynamic Real-Time Robotics

MotionCam-3D delivers human-like efficiency with real-time object position updates. Ideal for object manipulation, sorting on moving conveyor belts, and quality control. It streams 3D data at up to 20 fps ensuring immediate detection of any changes.

2.

Transparent, Glossy, or Dark Object Scanning

MotionCam-3D excels in capturing transparent, reflective, and dark objects—materials that typically challenge 3D vision systems. Thanks to the proprietary CMOS computational image sensor (COMPIS) and patented Parallel Structured Light technology, it precisely captures 3D data from these complex materials, making automation possible where it once wasn't.

3.

Digital Twinning & Multiview Bin Picking

High frame rates minimize scan differences, allowing seamless stitching of multiple perspectives—crucial for tasks like vehicle underbody inspections and quality control, where accurate, complete data is essential, or multiview bin picking that uncovers occluded objects.

4.

Real-Time Quality Control on Moving Lines

MotionCam-3D captures moving scenes with submillimeter accuracy, making it perfect for inline quality control where production lines cannot stop. The capability to capture the whole scene at once means the process is not spoiled by vibrations or arbitrary movement.

5.

Color for AI Enhanced Inspection, Verification & Segmentation

For applications requiring detailed information, MotionCam-3D Color offers up to 8 Mpix RGB data, corresponding 1:1 with the 3D data. Ideal for quality control, code recognition, or complex object segmentation.

6.

Quick Setup in 3 Minutes

Settings Assistant identifies the best parameters for your application and helps achieve optimal performance every time.

Unlock the Future of Automation with MotionCam-3D

The ability to scan without stopping, real-time data acquisition and processing, means faster operations, reduced cycle times, and a significant competitive edge in any industry.

Automotive

- Bin Picking
- Foundry
- Deburring - fastest 3D digital twinning
- Racking & deracking of pressed parts - for dynamic assembly - fastest picking, dynamic placing
- 3D Best-fit Joining of attachment parts
- Dynamic 3D inspection of pressed parts - hole identification & presence check
- Fast hole detection and parts positioning for CO2 welding
- 3D digital twinning of the whole car body
- Bolt screwing - tightening (dynamic)
- 3D Gap and flushness measurement
- In-line inspection of metal parts
- Underbody inspection
- Dynamic wheel alignment

Manufacturing

- Palletization and depalletization of large parts
- Automated object polishing
- Automated inspection of large objects in motion
- Automated assembling of machine parts
- Automated repair
- Intelligent welding application

Logistics

- Intralogistics e-commerce - sorting goods in transparent packaging
- Sorting objects of irregular shapes on a moving conveyor
- Depalletization of randomly palletized boxes and good



Partner Integration

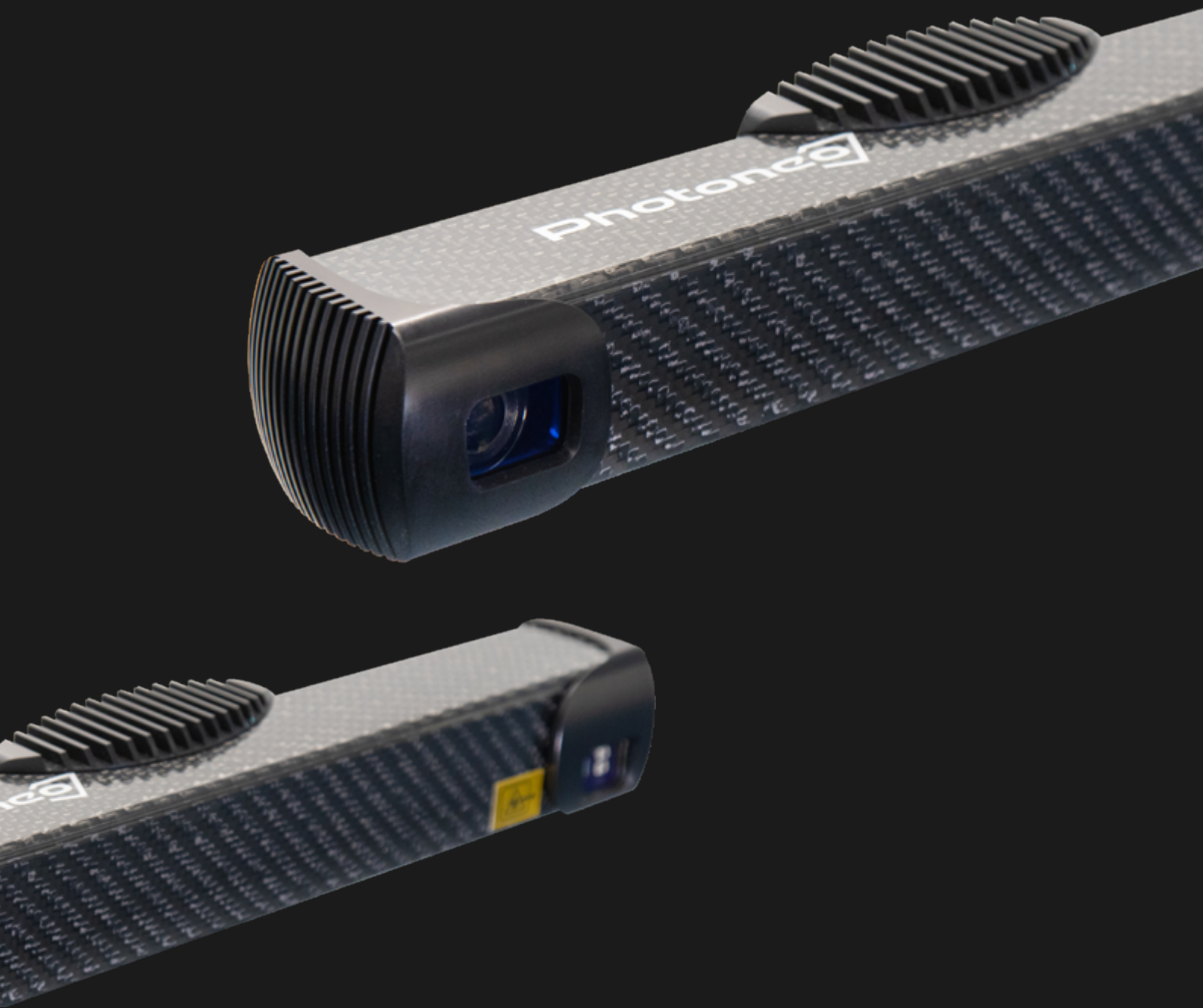
Comau Depalletization with 3D Vision

Comau MI.RA Depalletizer leverages Photoneo MotionCam-3D and advanced algorithms to revolutionize depalletizing. This cutting-edge system efficiently handles both single-SKU and mixed-SKU boxes, regardless of their orientation, offering a fast and cost-effective solution for warehouses. Equipped with Photoneo technology, the MI.RA Depalletizer processes up to 800 SKUs per hour and cuts commissioning time by up to 70%. This blend of speed and precision significantly enhances productivity, making it a powerful tool for optimizing warehouse operations.

Case Study

Parcel Singulation Solution

In partnership with one of the largest logistics companies, MotionCam-3D was implemented for parcel singulation, efficiently processing a bulk of envelopes and packages. The solution achieved a cycle time of 1.3 to 1.8 seconds, with a throughput of 2,000 to 2,300 parcels per hour. Delivering a 95% pick rate right out of the box and 100% successful segmentation, this system ensured flawless vision and reliable performance. Powered by ABB robotics, the solution is scalable globally, meeting the high demands of parcel handling across various environments.



PhoXi 3D Scanner

Best-in-class Industrial 3D Scanning

Unmatched Performance in Tough Environments

The PhoXi 3D Scanner sets the standard for industrial 3D scanning with exceptional range, onboard processing, and GigE Vision compatibility.

Whether improving efficiency, cutting costs, or achieving high-precision scans in challenging environments, PhoXi 3D Scanner is the ultimate solution. Its robust design and seamless integration make it ideal for demanding machine vision tasks.

Industrial Use

From bin picking to quality control, PhoXi 3D Scanner handles a variety of tasks across automotive, manufacturing, and logistics industries.

Small Parts Inspection

The PhoXi 3D Scanner S is perfect for scanning small objects with high precision, making it ideal for detailed inspections.

Large Object Scanning

The PhoXi 3D Scanner XL is tailored for large objects, such as depalletizing large, overlapping boxes.

Complex Surface Scanning

PhoXi 3D Scanner excels at capturing clear, accurate point clouds with a great dynamic range, regardless of material - shiny, reflective, or dark.

Industrial 3D scanner for the most demanding machine vision tasks



Scanning range up to 4 meters



Best ambient light suppression on the market up to 100,000 lux



Onboard processing saves up to 50% of processing time and costs



Ready to deploy on virtually any machine through GigE Vision

Learn more about

Main Benefits

Versatile Across Applications

Specifications

1.

Unmatched Scanning Range

PhoXi 3D Scanner offers up to 2,5 x the range of conventional scanners, making it perfect for both large and small objects. With a scanning volume from 18 cm to 4 meters, it captures every detail, ensuring no part goes unnoticed.

2.

Onboard Processing for Efficiency

PhoXi 3D Scanner onboard processing slashes processing time and costs by up to 50%. By managing complex data directly within the scanner, it accelerates operations and reduces expenses, making it a fast, cost-effective choice.

3.

Best Ambient Light Suppression

Achieve Consistent, reliable, high-quality 3D scans in challenging conditions, including direct sunlight up to 100,000 lux. It excels in scenes with both dark and bright areas simultaneously and overcomes issues caused by changing indoor lighting, shadows, and reflections.

4.

GigE Vision Compatibility

Seamlessly integrate PhoXi 3D Scanner with any machine thanks to its GigE Vision compatibility. The scanner fits smoothly into your existing systems with minimal setup.

5.

Built for Harsh Environments

Designed to thrive in tough industrial settings, the PhoXi 3D Scanner is IP65-rated for dust and water resistance. Its durability makes it the preferred choice for industries requiring reliable, rugged performance.

6.

High Accuracy and Resolution

With 3.2 million 3D points per scan and accuracy from 35 μm , the PhoXi 3D Scanner delivers superior precision, whether scanning intricate small parts or large objects. The quality of the point cloud lives up to the demands of the most complex and challenging applications.

7.

Lightweight, Yet Powerful

Weighing just 1.5 kg, the PhoXi 3D Scanner is easy to mount on robotic arms. Despite its low weight, it offers powerful, energy-efficient operation, consuming less than 35 W—ideal for reducing operational costs. Its carbon body also ensures thermal stability.

8.

Quick and Easy Setup

PhoXi 3D Scanner is designed for rapid deployment. With plug-and-play functionality, you can start scanning in just 3 minutes. The Power-over-Ethernet (PoE) option simplifies installation, requiring only one cable for power and data.

9.

3-Minute Scanner Setup

Setting up your PhoXi 3D Scanner takes only three minutes. Settings Assistant automatically selects the best scanning parameters, ensuring optimal performance even without expert knowledge.

Partner Integration

Flexloader - Advanced Robotic Cells with PhoXi 3D Scanners

Photoneo PhoXi 3D Scanners integrated into ABB's Flexloader robotic cells represent a significant leap in automation. These cells, capable of handling semi-oriented and randomly oriented parts, offer system integrators a versatile and modular solution that's easy to deploy and program. The result is a high picking success rate, making Flexloader an essential tool in advanced robotic machine tending.



Case Study

Automated Welding for Steel Structures

Photoneo XL scanners were integrated into ABAGY's system to revolutionize the welding process for a leading steel structure manufacturer. The solution addressed the challenges of handling high-mix production with rapidly changing designs. By automating the welding process and adapting to real-time part deviations, the system significantly reduced setup times and increased operational efficiency.

The Photoneo-powered system delivered a 30% reduction in grinding, a 31% savings on wire, and a 10% savings on gas. Additionally, the solution achieved high arc times of up to 90%, maximizing throughput while minimizing downtime. This implementation not only streamlined the welding process but also ensured precise and reliable operations, setting a new standard for efficiency in the steel structure industry.

Case Study

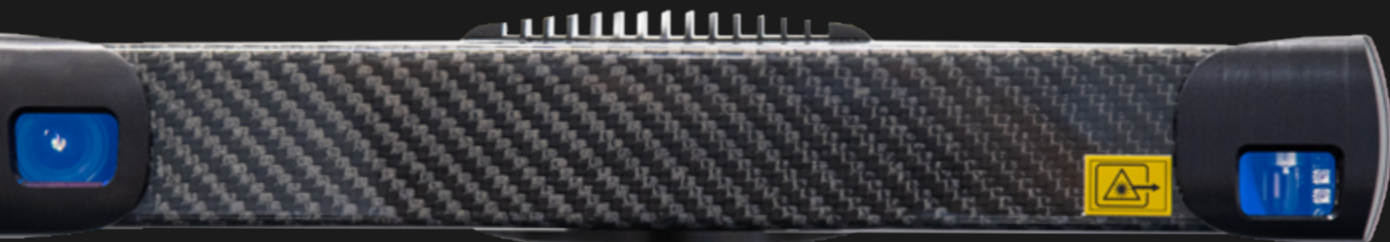
Boards Picking and Packing with PhoXi 3D Scanners

PhoXi 3D Scanner XL was deployed for automated and semi-automated depalletization of various objects, including carton boxes, plywood, and metal containers. The system achieved a 99.7% success rate, handling 650 pieces per hour in single-pick mode and up to 1,000 pieces per hour in multi-pick mode. This solution not only increased productivity but also reduced costs, proving its effectiveness in large-scale operations.

Partner Integration

TM 3D Vision Bin Picking with Photoneo

Techman Bin Picking Solution powered by Photoneo PhoXi 3D Scanner delivers a seamless bin picking experience. Fully integrated with TMflow, it requires no additional software, simplifying the process for users. The system supports three object positioning modes—Geometry, Pre-defined CAD, and Point Pose—and includes a collision check function, ideal for random bin picking applications. This integration offers a simple setup for integrators, handling everything from small parts to irregularly shaped objects with precision and efficiency.



Alpha 3D Scanner

Powerful, Simple, and Efficient

Harness Advanced Structured Light Technology

Alpha 3D Scanner uses structured light technology to produce high-quality 3D point clouds. Whether scanning large objects like boxes or handling non-demanding tasks, it offers an unbeatable price-to-performance ratio.

The Alpha 3D Scanner is your gateway to modern 3D vision technology. It's a reliable, high-performance solution for various applications, perfect for upgrading outdated systems or scanning logistics and medium-sized items. Get up and running in minutes.

Logistics

Efficiently scan and track large volumes of items, ensuring accurate inventory and streamlined operations.

Manufacturing

Integrate into robotic systems for precise hand-eye coordination, optimizing production lines and quality control.

General Industrial Use

Deploy in any industrial setting requiring reliable 3D scanning, benefiting from Alpha 3D Scanner's robust design and ease of use.

Industrial 3D scanner for machine vision tasks



**Scanning range up to
4 meters**



**Lightweight and easy to
mount on robotic arms**



**Plug-and-play setup that
gets you scanning in just
3 minutes**

Learn more about

Main Benefits

Versatile Across
Applications

Specifications

1.

Small Body, Big Scanning Volume

With a scanning range of up to 4 meters, Alpha 3D Scanner efficiently captures both large and small objects, making it ideal for logistics, manufacturing, and other industrial tasks with varying object sizes.

2.

Lightweight and Energy-Efficient

Lightweight and easy to mount on robotic arms, Alpha 3D Scanner is perfect for hand-eye applications while providing a large field of view. Its low energy consumption ensures efficient operation and lower costs.

3.

Quick and Easy Integration

Designed for simplicity, Alpha 3D Scanner offers a plug-and-play setup that gets you scanning in just 3 minutes. The Power-over-Ethernet (PoE) connector streamlines installation with a single cable for power and data.

4.

Built for Tough Environments

Alpha 3D Scanner IP65 rating means it's dust-tight and resistant to low-pressure water jets, ensuring reliable performance in harsh industrial environments.

5.

Fast Sensor Setup

Set up your Alpha 3D Scanner in just three minutes. Identify ideal scanning parameters for your application with Settings Assistant, enhancing the plug-and-play experience and allowing for rapid system deployment.

6.

Flexible Power Options

Choose between PoE or 24V power based on your needs. The single-cable PoE solution simplifies installation, even in challenging environments.

7.

Superior Ambient Light Suppression

With 1.5Mpix structured light scanning and laser projection, Alpha 3D excels even in brightly lit environments, delivering clear and accurate 3D data.

8.

Seamless System Integration

Alpha 3D Scanner supports GigE Vision, allowing easy integration with various systems and compatible third-party applications.



Case Study

TM AI Cobot Multi-Form Boxes Depalletization

In collaboration with Techman, Photoneo MotionCam-3D, PhoXi 3D Scanner, and Alpha 3D Scanner were integrated to elevate depalletizing automation. The system efficiently handled multi-form boxes, enhancing accuracy and reliability. Capable of processing various sizes and shapes, the solution delivered consistent performance, significantly improving operational efficiency in diverse industrial environments.



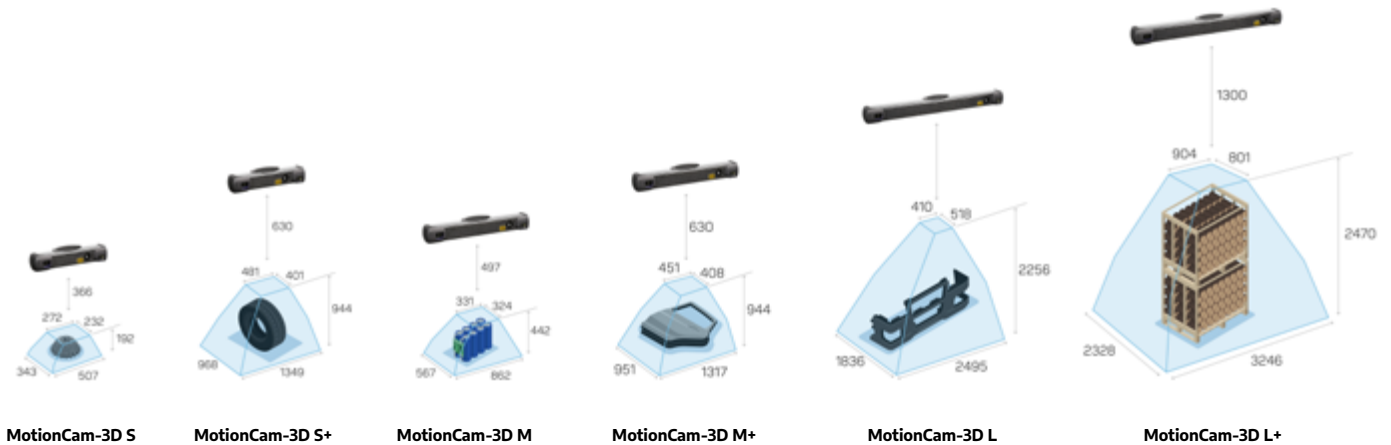
Product

Specifications

MotionCam-3D, PhoXi 3D Scanner,
Alpha 3D Scanner

MotionCam-3D

Scanning ranges

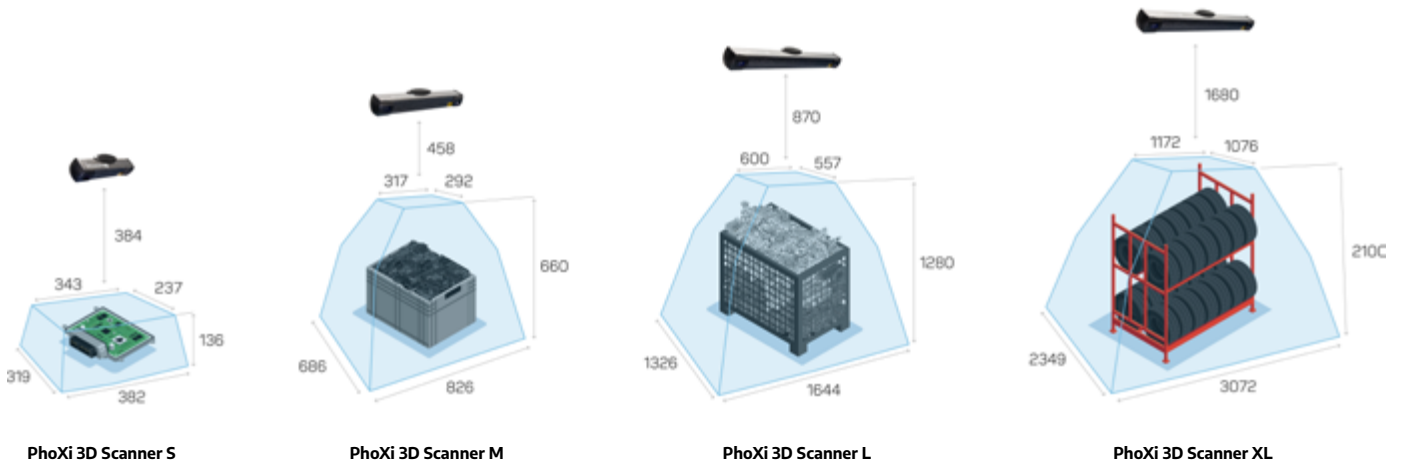


Specification Sheet

Size	S	S+	M	M+	L	L+
Scanning range	366-558 mm	630 - 1574 mm	497 - 939 mm	630 - 1574 mm	778 - 3034 mm	1300 - 3780 mm
Optimal scanning distance	444 mm	907 mm	653 mm	907 mm	1252 mm	1944 mm
Point size (at sweetspot)	0.37 mm at 0.9 Mpix 0.25 mm at 2 Mpix	0.76 mm at 0.9 Mpix 0.52 at 2 Mpix	0.55 mm at 0.9 Mpix 0.37 mm at 2 Mpix	0.76 mm at 0.9 Mpix 0.52 mm at 2 Mpix	1.05 mm at 0.9 Mpix 0.72 mm at 2 Mpix	1.680 mm at 0.9 Mpix 1.150 mm at 2 Mpix
Accuracy	< 0.300 mm	< 1.000 mm	< 0.500 mm	< 0.600 mm	< 1.250 mm	< 2.050 mm
Temporal noise	< 0.100 mm	< 0.150 mm	< 0.100 mm	< 0.100 mm	< 0.150 mm	< 0.550 mm
Point size	0.25 mm @z = 442 mm	0.52 mm @z = 900 mm	0.37 mm @z = 650 mm	0.52 mm @z = 900 mm	0.72 mm @z = 1239 mm	1.150 mm @z = 1944 mm
Accuracy	< 0.150 mm	< 0.500 mm	< 0.250 mm	< 0.300 mm	< 0.900 mm	1.500 mm
Temporal noise	< 0.050 mm	< 0.100 mm	< 0.050 mm	< 0.050 mm	< 0.100 mm	0.400 mm
Depth map resolution (static mode)	1680 x 1200	1680 x 1200	1680 x 1200	1680 x 1200	1680 x 1200	1680 x 1200
Depth map resolution (dynamic mode)	Up to 1680 x 1200	Up to 1680 x 1200	Up to 1680 x 1200	Up to 1680 x 1200	Up to 1680 x 1200	Up to 1680 x 1200
Maximum FPS	Up to 20 fps	Up to 20 fps	Up to 20 fps	Up to 20 fps	Up to 20 fps	Up to 20 fps
Data acquisition time	10 ms	10 ms	10 ms	10 ms	20 ms	20 ms
Maximum object / camera speed	40 m/s	40 m/s	40 m/s	40 m/s	40 m/s	40 m/s
3D point throughput	15 million points per second	15 million points per second	15 million points per second	15 million points per second	15 million points per second	15 million points per second
GPU	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores
Dimensions	86 x 68 x 308 mm	86 x 68 x 308 mm	86 x 68 x 428 mm	86 x 68 x 428 mm	86 x 68 x 628 mm	86 x 68 x 628 mm
Baseline	230 mm	230 mm	350 mm	350 mm	550 mm	550 mm
Weight	1000 g	1000 g	1050 g	1050 g	1150 g	1150 g

PhoXi 3D Scanner

Scanning ranges

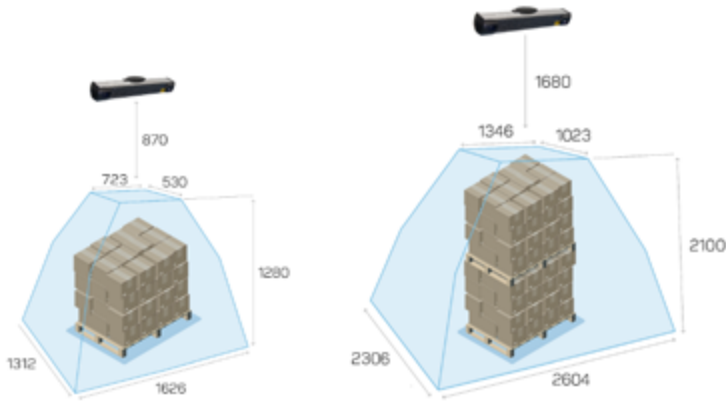


Specification Sheet

Size	S	M	L	XL
Resolution (3D Points)	Up to 3.2 M	Up to 3.2 M	Up to 3.2 M	Up to 3.2 M
Scanning range	384 – 520 mm	458 – 1118 mm	870 – 2150 mm	1680 - 3780 mm
Optimal scanning distance	442 mm	650 mm	1239 mm	2326 mm
Scanning area at sweet spot	360 x 272 mm	590 x 404 mm	1082 x 772 mm	1954 x 1459 mm
Point to point distance	0.174 mm	0.286 mm	0.524 mm	0.947 mm
Calibration accuracy (1 σ)	0.050 mm	0.100 mm	0.200 mm	0.500 mm
Temporal noise (1 σ)	0.050 mm	0.100 mm	0.190 mm	0.400 mm
Scanning time	250 – 2250 ms	250 – 2500 ms	250 – 2750 ms	250 – 3000 ms
Dimensions	86 x 68 x 296 mm	86 x 68 x 416 mm	86 x 68 x 616 mm	86 x 68 x 941 mm
Baseline	230 mm	350 mm	550 mm	850 mm
Weight	900 g	950 g	1100 g	1200 g
GPU	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA cores	NVIDIA Pascal™ Architecture GPU with 256 CUDA core

Alpha 3D Scanner

Scanning ranges



Alpha 3D Scanner L

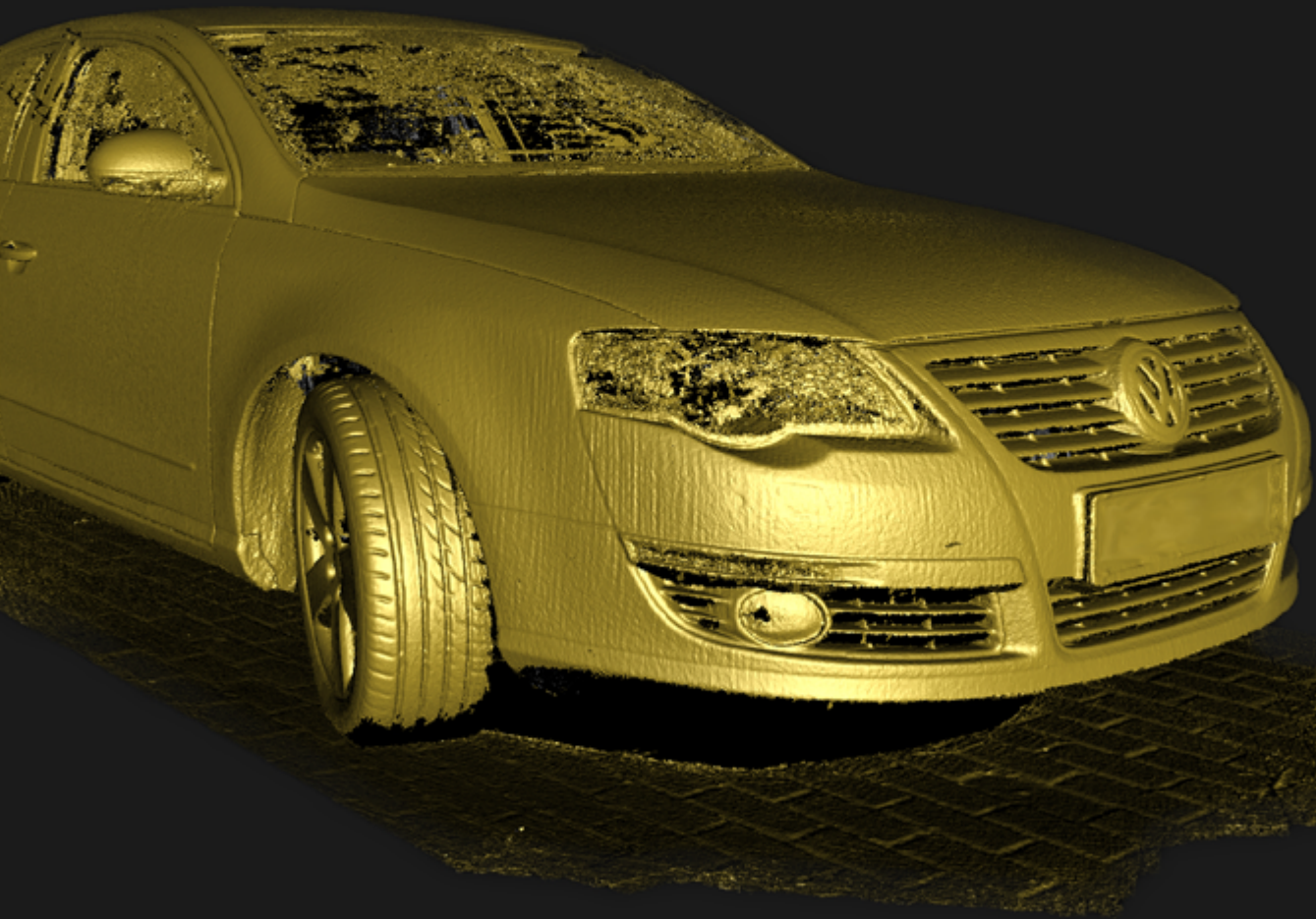
Alpha 3D Scanner XL

Specification Sheet

Size	L	XL
3D Sensing Technology	Structured Light	Structured Light
Resolution	Up to 1.5 M	Up to 1.5 M
Scanning range	870 - 2150 mm	1680 - 3780 mm
Optimal scanning distance	1245 mm	2331 mm
Scanning area at sweet spot	1091 x 761 mm	1736 x 1421 mm
Point-to-point distance (at sweet spot)	0.82 mm	1.52 mm
Calibration accuracy (1 σ)	0.50 mm	1.30 mm
Temporal noise (1 σ)	0.45 mm	1.00 mm
Scanning time	from 450 ms	from 450 ms
Dimensions	86 x 68 x 428 mm	86 x 68 x 428 mm
Baseline	350.0 mm	350.0 mm
Weight	950 g	950 g
Power	PoE or 24V	PoE or 24V
Data connection	1 Gbit Ethernet	1 Gbit Ethernet

All of our products support software





Digital Twinning

The Most Versatile Model Creation

Fast, Accurate, and Versatile

3D Model Creation

Photoneo Digital Twinning is the most versatile 3D model creation tool available, designed to deliver fast and accurate 3D models from multiple scans or continuous data streams from Photoneo 3D Sensors. This powerful software solution is ideal for a variety of applications, including robotic guidance, quality inspection, and reverse engineering.



Advanced 3D Data Acquisition and Processing

Photoneo Digital Twinning enables the seamless creation of precise 3D models by automatically processing scans from multiple perspectives. It offers a one-click solution that combines scan acquisition, point cloud alignment, filtering, and surface reconstruction into a single, efficient workflow. Its graphical user interface and API environment make it accessible and easy to integrate into your existing systems.

Real-Time Tracking and Seamless Integration

This feature takes digital twinning to the next level by offering real-time tracking and integration of 3D scans into triangular meshes. It is perfect for advanced applications that require precise, continuous data, such as integrating with robotic manipulators, rotary tables, and other automated setups. The software supports a wide range of 3D creation tasks, making it an essential tool for any operation needing detailed and accurate digital models.

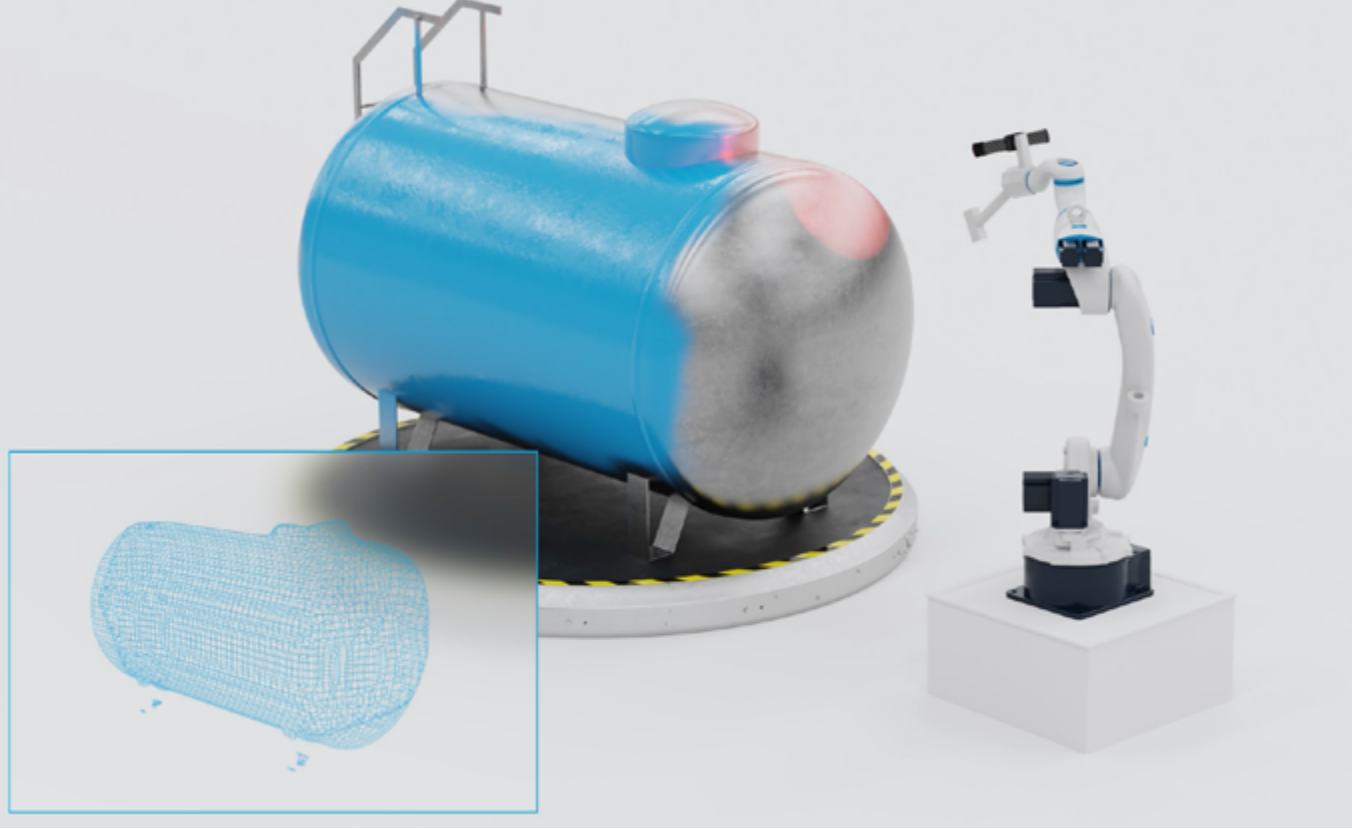
Quality Control & Measurement in Motion

When paired with MotionCam-3D, Photoneo Digital Twinning excels in quality control and measurement tasks, especially with moving or vibrating objects. The large scanning volume of Photoneo 3D Sensors allows for synchronized area scanning, creating highly accurate models even of oversized objects. This capability ensures that you can capture detailed measurements without motion blur, leading to more precise and reliable outcomes.

Photoneo Digital Twinning is not just a software solution; it's a digital twinning process, empowering your operation with the tools needed for cutting-edge 3D model creation and real-time integration.

Key Features





Case Study

Automated Helicopter Blade Inspection

Photoneo 3D vision technology was deployed to automate the inspection of helicopter blades for a leading aerospace company. The solution addressed the challenge of verifying blade integrity by replacing the manual, time-consuming process with a precise and efficient robotic system. Utilizing advanced 3D point cloud stitching and pose estimation, the system ensured accurate inspections, even for large, reflective surfaces.

Achieving high accuracy in blade positioning and inspection, the solution significantly reduced inspection times and increased fleet availability. In production since 2021, this Comau-powered system is now being considered for broader deployment, showcasing its scalability and effectiveness in complex aerospace applications.





Automation solutions

AI-powered material handling available
for everyone

Bin Picking Studio**Locator Studio****Features**

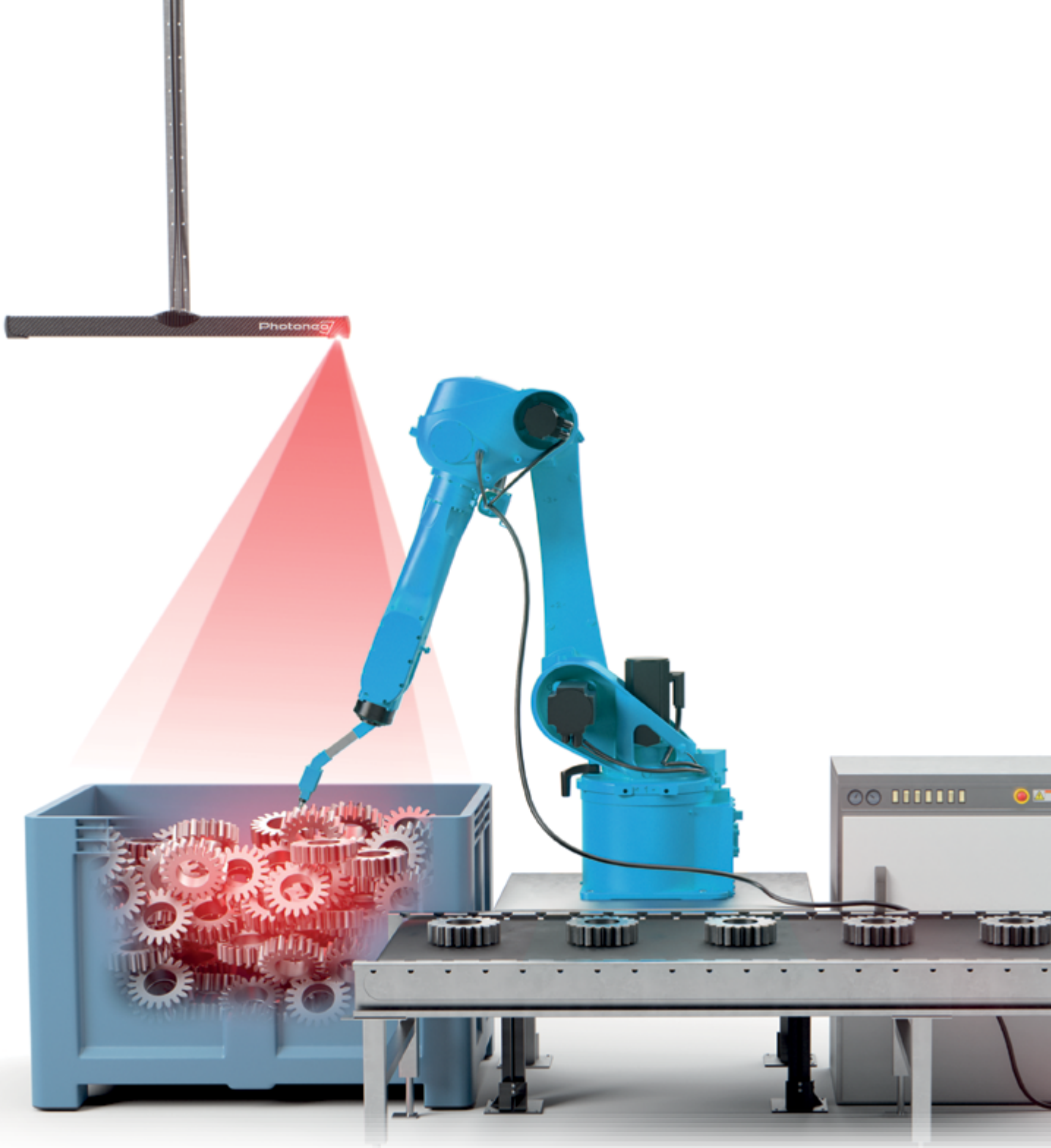
- | | |
|---------------------------------------|--|
| → Handling of randomly oriented parts | → Handling of structured, semi-oriented & randomly parts |
| → Picking with collision avoidance | → De-racking applications |
| → Bin-picking applications | → Picking parts from a non-collision environment |
| → 6-axis robots | → Compatible with conveyor picking |

Extension modules

- | | |
|------------------------|------------------------|
| → Depalletizing Module | → Depalletizing Module |
| → Multiview Module | → Delayering module |

General features

- User friendly web user interface
- Hand-Eye / Extrinsic
- Any Photoneo 3D Sensor
MotionCam-3D / PhoXi 3D Scanner / Alpha 3D Scanner



Bin Picking Studio

The Most Versatile Intelligent
Bin Picking

Key Reasons to Choose Bin Picking Studio

Reliable, easy, and efficient all-in-one solution that automates your bin picking operations. It transforms complex tasks into streamlined processes. With its comprehensive features and scalability, it's the clear choice for businesses looking to enhance productivity.

All-in-One Integration

Bin Picking Studio combines everything you need—3D vision, localization, path planning, and robotic control—into one seamless package. No need to juggle multiple providers; everything is included for a complete solution.

Fast Return on Investment

Designed for speed, Bin Picking Studio offers cycle times as fast as 5 seconds. This efficiency translates into a rapid return on your investment, making it a smart choice for businesses focused on productivity.

Expert Support from Start to Finish

Photoneo provides free feasibility studies, consultancy, and continuous support to ensure your project runs smoothly. Our dedicated team is there to assist you every step of the way, from initial setup to full integration.

Flexible and Adaptable 3D Vision

Bin Picking Studio offers a range of scanning volumes, from 161 mm to 4000 mm. Thanks to the wide choice of Photoneo 3D Sensors, you get the perfect fit for your specific application.

**The most
mature
and proven
Bin-Picking
solution
available today**



**Cycle times as fast as 3
seconds**



**Scanning volumes, from
161 mm to 4000 mm**

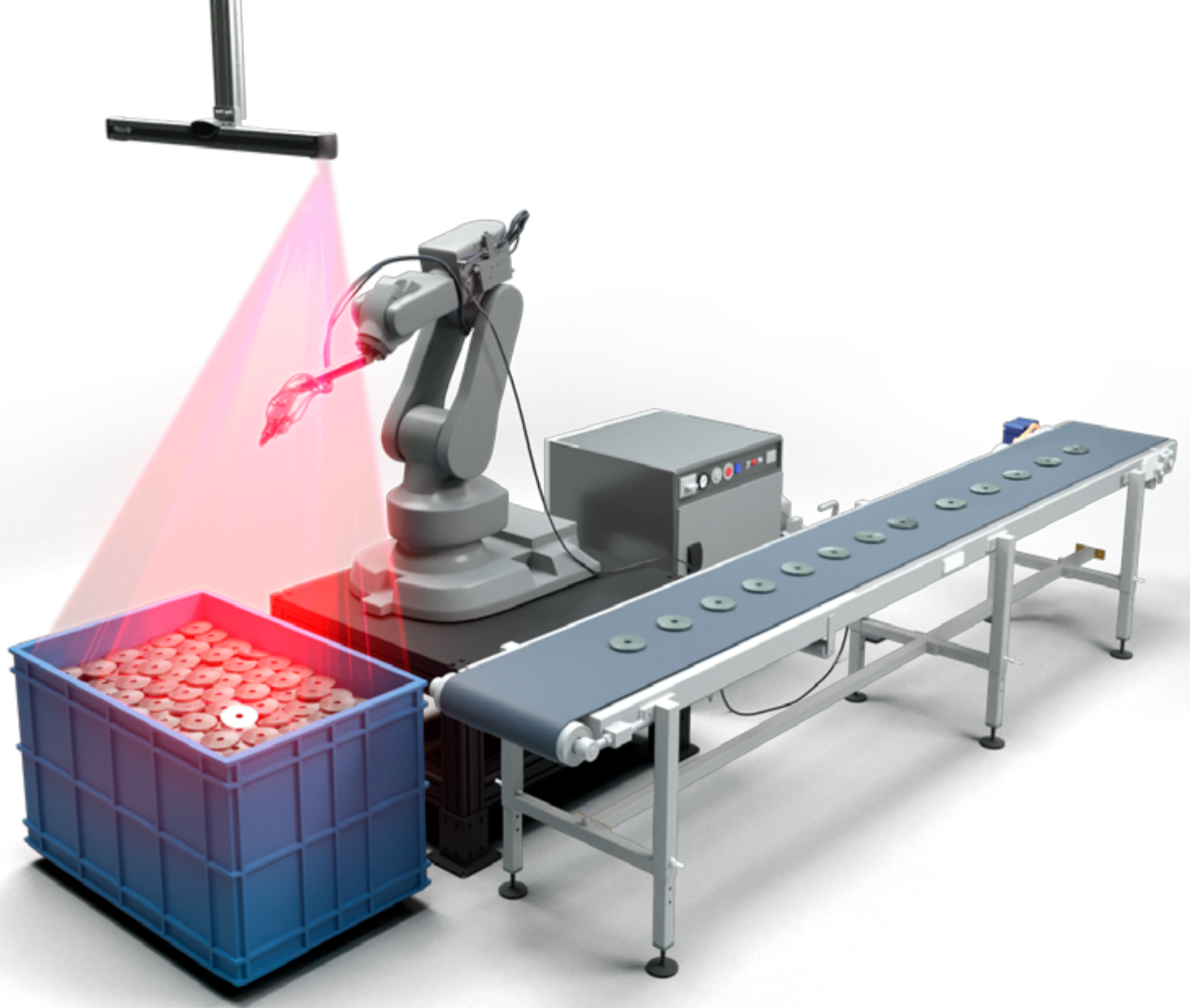


**Over 250 robot
models from all major
manufacturers supported**

Learn more about

Advanced Features

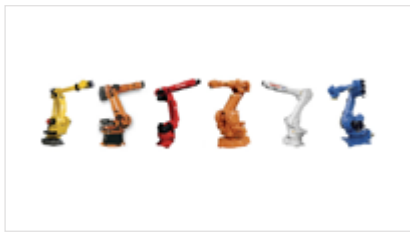
Case Studies



Case Study

HYDAC - Bin Picking of Housings

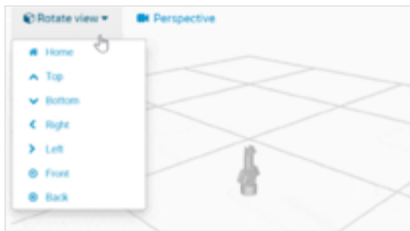
In partnership with HYDAC Slovakia, Bin Picking Studio was implemented to automate the picking of small, shiny metal housings. The solution efficiently handled randomly placed parts from large bins, ensuring precise placement in the desired orientation. Achieving a 99% success rate with a 7-second cycle time and a scanning distance of 2400 mm, this ABB Slovakia-powered system has been in production since 2017. It is now successfully deployed in Germany, Spain, Italy, the US, China, and Japan, demonstrating its high scalability for global operations.



1.

Select Your Robot

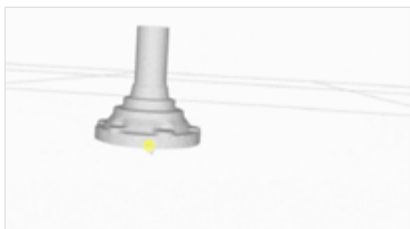
Easily find the right match from over 250 robot models. If your model isn't listed, Photoneo helps to integrate it seamlessly.



2.

Upload Gripper Model

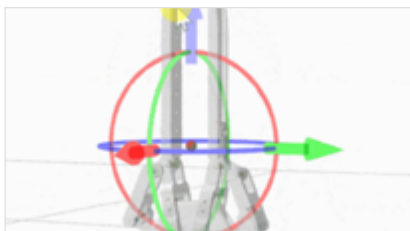
Upload your gripper's CAD model for immediate tool point configuration in a virtual environment.



3.

Upload Object Model

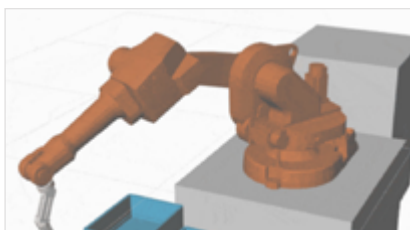
Start planning by uploading the CAD model of the item you want to pick, allowing instant interaction in a 3D virtual space.



4.

Set Up Gripping Points

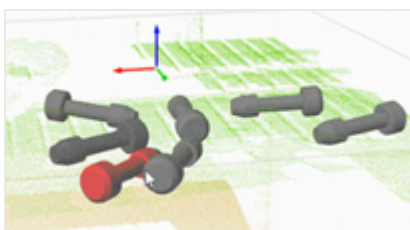
Define precise gripping points using a user-friendly visual interface, eliminating the need for complex calculations.



5.

Build Your Environment

Create or upload your picking cell's CAD model, visualizing and adjusting the setup in real-time 3D.



6.

Configure Localization

Utilize a fast, robust localization engine optimized for accurate object detection in bin picking scenarios.



Locator Studio

Simple and Reliable 3D Picking

Effortless Object Picking with Maximum Flexibility

Locator Studio by Photoneo is designed to streamline your de-racking and object-handling tasks. With its broad robot compatibility, fast setup, and precision 3D positioning, it's the ultimate solution for picking random objects in non-collision environments.

Proven, Reliable Technology

Built on a robust localization engine validated in hundreds of applications, Locator Studio delivers consistent, dependable performance.

Seamless System Integration

Easily integrates with your existing systems using an open TCP/IP communication protocol, making it adaptable to various environments.

Universal Robot Compatibility

Locator Studio works seamlessly with any robot model or industrial manipulator, offering unmatched flexibility in deployment.

Precision 3D Positioning

Accurately reports object positions across all six degrees of freedom (x, y, z, rx, ry, rz), ensuring reliable and precise handling every time.

Flexible & Easy Solution

Picking from conveyors with MotionCam-3D

No need to stop the conveyor belt to perform actions or pick objects.

De-Racking:

Efficiently handles structured and semi-oriented parts from shallow bins or racks.

Non-Collision Environments

Optimized for environments where objects are easily accessible without risk of collision.

Structured & Semi- Oriented Object Handling

Versatile for picking both oriented and semi-oriented parts across various tasks.

Assembly and object handling

Establish real-time object position tracking and navigation of manipulators.

Learn more about

Key applications

Case Study

Magna - Basket Localization

In collaboration with Magna International, PhoXi 3D Scanners and Locator Studio were used to develop an innovative solution for basket localization. The system accurately recognizes, locates, and picks shiny baskets filled with metal machined parts, placing them onto a conveyor belt. This fenceless, collaborative setup was created with ABB and Blue Danube Robotics (Airskin), marking a significant advancement in automation. Operating in Austria since 2020, this highly scalable solution is ready for global deployment.







Depalletization

Powered by **AI** for Maximum Efficiency

Elevate Your Warehouse Automation

Fully operational out of the box, perfect for depalletization. The ideal choice for modern, AI-powered warehouse automation.

AI-Driven Vision

Automate repetitive tasks with a vision system powered by an AI Neural Network. Pre-trained on thousands of box types, it adapts easily to various objects, including bags and bottles.

High-Speed 3D Data Processing

Ensures fast depalletization, enabling 24/7 operation and continuous productivity.

Flexible & Customizable

The AI neural network can be tailored to your specific needs, providing customized solutions for your warehouse.

Modular & Scalable

Use as a standalone vision solution or upgrade it with robotics and path planning for a fully integrated system.

AI-driven depalletization solution



1,000 boxes per hour



99.7% accuracy



Powered by an AI Neural Network

[Learn more about](#)

[Case studies](#)



Case Study

INGENERSUN, S.L. - Robotic Depalletization of Tires

In partnership with INGENERSUN, S.L., an advanced robotic depalletization system for rubber tires was developed. The solution integrates Bin Picking Studio with the PhoXi 3D Scanner XL from Photoneo, along with a Fanuc M-410iC/315 robot, a 15-meter track, and six unloading bays. The system also includes software from Bcvision and barcode readers for precise identification, with an automatic gripper path rectification feature to handle deviated columns.

The decision to use Photoneo 3D sensing technology was driven by its global reputation for excellence in vision-guided robotics. This collaboration between Bcvision and Photoneo ensures top-tier integration and performance in INGENERSUN's robotic cells, delivering a robust and efficient solution for tire depalletization.



Case Study

Rebl Industries - Depalletizing with Photoneo

Rebl Industries' depalletization solution utilizes Photoneo's PhoXi 3D Scanner to deliver a high-performance solution for the intralogistics sector. Offering a scalable and user-friendly approach, it easily adapts to specific operational needs through a robot-as-a-service model. Leveraging Photoneo's advanced technology, precise object recognition enables the handling of various box types, sizes, and weights. Among several workmates deployed, one colleague "Clipson", operates tirelessly around the clock in Jönköping, Sweden, efficiently unloading incoming goods.

Rebl Industries has developed a robot solution for unknown depalletization, capable of handling <1300 packages per hour depending on sizes and weights. This advanced robot efficiently removes packages from pallets and sorts them with precision, greatly enhancing the speed and accuracy of material handling processes. By automating this traditionally labor-intensive task, the robot reduces the physical strain on workers, minimizes the risk of injuries, and improves overall workplace safety. Additionally, the increased efficiency and reliability provided by the robot lead to higher productivity and allow employees to focus on more complex and value-added tasks, thereby fostering a more positive work environment.





Delayering

Maximize Speed and Efficiency
in Logistics with Whole-Layer Picking

Scalable Solution

Tailored for Smart Warehouses

With unmatched speed, flexibility, and ease of integration, it's the ideal solution for modern, high-speed warehousing and logistics operations.

Speed & Efficiency

Whole-layer picking dramatically reduces handling time, increasing throughput, and cutting labor costs.

Flexibility

Adapts to standard boxes or irregularly shaped items, providing a robust solution for challenging scenarios.

Robot-Agnostic

Seamlessly integrates with any robotic solution, working smoothly with all kinds of robotic grippers for precise control and operation.

User-defined Customization

Tailor the system to your specific needs without complex programming. Fine-tune settings to ensure optimal performance for your logistics challenges.

Fast 3D Data Acquisition & Processing

High-speed image acquisition and rapid data processing minimize turnaround time, maximizing operational efficiency and reducing downtime.

How Layering Application Works

1. Layer Detection

The size of the layer automatically adjusts to the gripper size.

2. Layer Picking

The robot controller requests the identified layer's pose from the Locator Studio to guide the manipulator.

Most Notable Awards and Recognitions



Vision Award

2018

For the MotionCam-3D, solidifying its leadership in 3D vision technology.



VisionSystems Innovation Awards

2018

For the PhoXi 3D Scanner



2019

For the MotionCam-3D.



IERA Award

2020

Awarded by the International Federation of Robotics (IFR) for groundbreaking contributions to robotics.



InVision Top Innovation Awards

2019 & 2021

Honored for the MotionCam-3D.



2024

Recognized for Ambient Light Suppression technology.



Commitment to **Quality**

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