

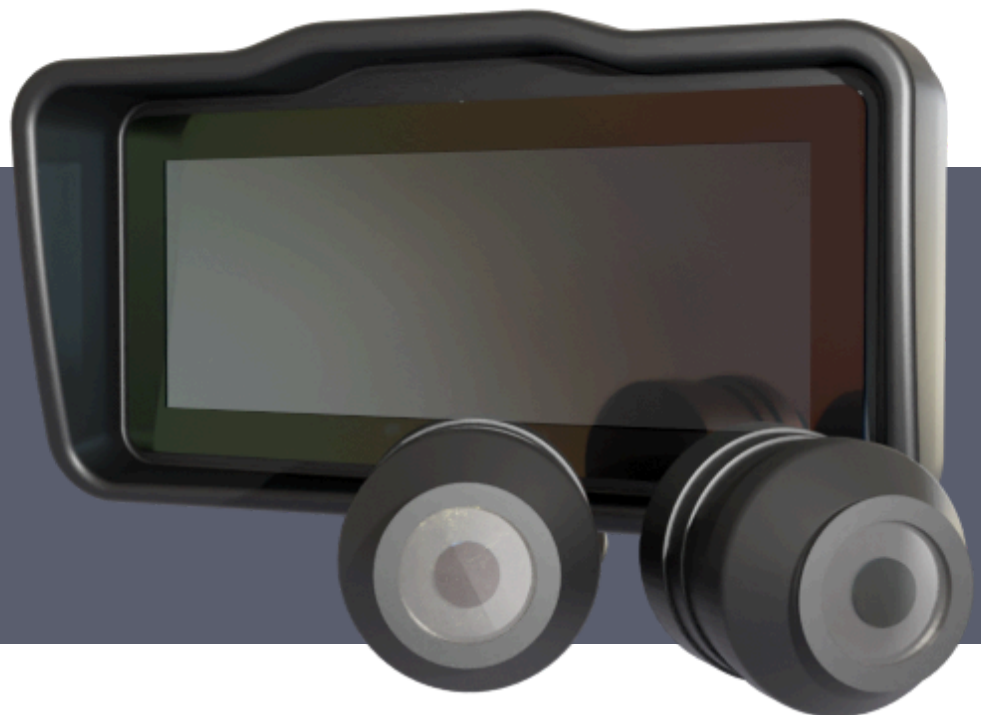
Vision Systems

for Industry

Since **1995**, we have been engineering **custom Industrial Vision Systems**, designed and manufactured entirely in Italy.

ITEM S.r.l. as part of ITEMGROUP, together with **Utopia S.r.l.** for software development and **ITEM MARE S.r.l.** for marine technologies, combines hardware expertise with advanced digital capabilities.

A vertically integrated production chain ensures rigorous control over components, assembly, and validation. The result is reliable vision systems that integrate seamlessly into complex architectures and offer guaranteed **long-term availability of spare parts**.



Monitors

All ITEM monitors are fully compliant with **ECE R10** requirements, and selected models are additionally approved as **Safety Devices** by the Ministry of Transport.

Each unit can be **engineered to specification**, including mechanical envelope, aspect ratio, resolution, luminance, and interface configuration, ensuring perfect integration within any system architecture.



Elaboration Units

These camera systems are powered by **GPU-powered Elaboration Units** developed in-house using advanced embedded technologies. As an **NVIDIA Inception Program member**, we ensure continuous alignment with the latest GPU and AI architectures.

We offer a comprehensive range of units, featuring:

- up to **150 TOPs**
- **Real Time** video processing (also when exploiting AI inference capabilities)
- **ECE R10** Certification
- Simultaneous management of up to 20 high resolution video streams.
- **Interoperability** with any other digital system of the vehicle (PLC, PCs, ...)



Accessories

ITEM also supplies a wide range of accessories. In particular, we provide PoE switches certified as Safety Devices by the Ministry of Transport for guaranteed system connectivity, as well as cables, connectors, power adapters, and other supporting components.

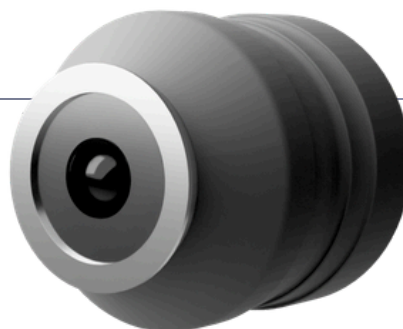
Technical specifications

- **Gigabit speed**
- PoE power: up to 90 W
- Transmission distance: up to 150m



Cameras

Since 1995, ITEM has been **manufacturing cameras** in Turin, serving as a technological partner for leading European companies in the field of operating vehicles. We ensure **scalable supply** by partnering with internationally recognized suppliers, dedicated **technical support**, and a **reliable spare parts chain**.

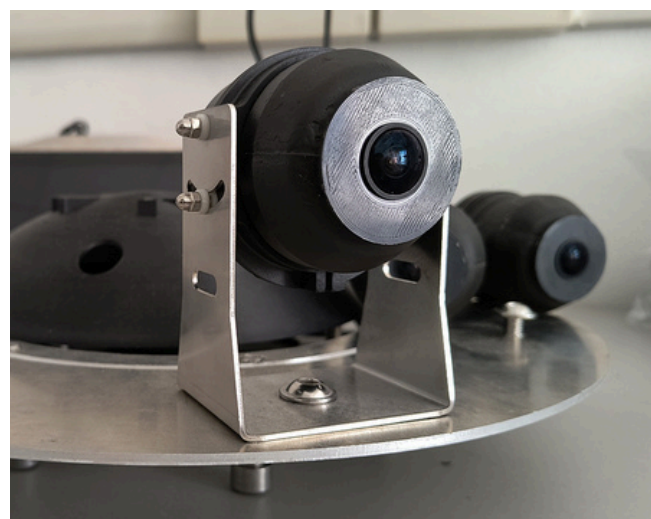


EV58 IP cameras are digital cameras designed and manufactured by ITEM, featuring a **patented tropicalization technology**.

They are **fully customizable**:

- support **PoE power supply**,
- can be manufactured in **custom shape and size**,
- can be equipped with **any type of connector, lens, or resolution up to 4k**,
- certified **ECE R10** and **IP68 (2 atm)**,
- **homologated by the Ministry of Transport**,
- completely **anti-fog** thanks to vacuum-sealed technology,
- withstand military temperature range (-55°C to +125 °C)

Our cameras are supplied with **custom brackets and mounting systems** and can be integrated into existing frames or structures.



ITEM S.r.l.

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Vision Software

We cover the full range of Computer Vision technologies, spanning **deterministic** algorithms, **Fourier-based** computer vision algorithms, **depth estimation**, video **distortions** and **AI solutions**.

All our systems can be integrated with **application-specific features**, while maintaining **near-zero latency** on our hardware.

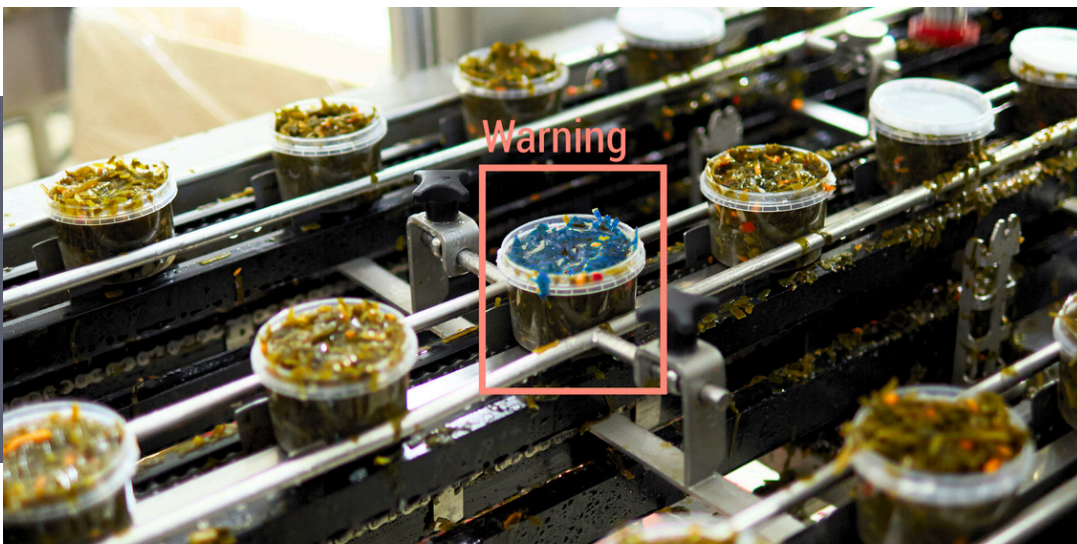
All of this is provided to the final user with modern, **fully custom HMI**, that we develop together with our customers to make them as intuitive and effective as possible.

AI-powered Computer Vision

We develop our own AI models, from architectural design to in-house training on both public datasets and application-specific data.

They are optimized to run on our hardware, delivering **Real-time image processing** and are designed for tasks such as:

- **Object detection and localization**
- **Asset tracking and counting**
- **Human detection**
- Facial expression recognition
- Pose estimation

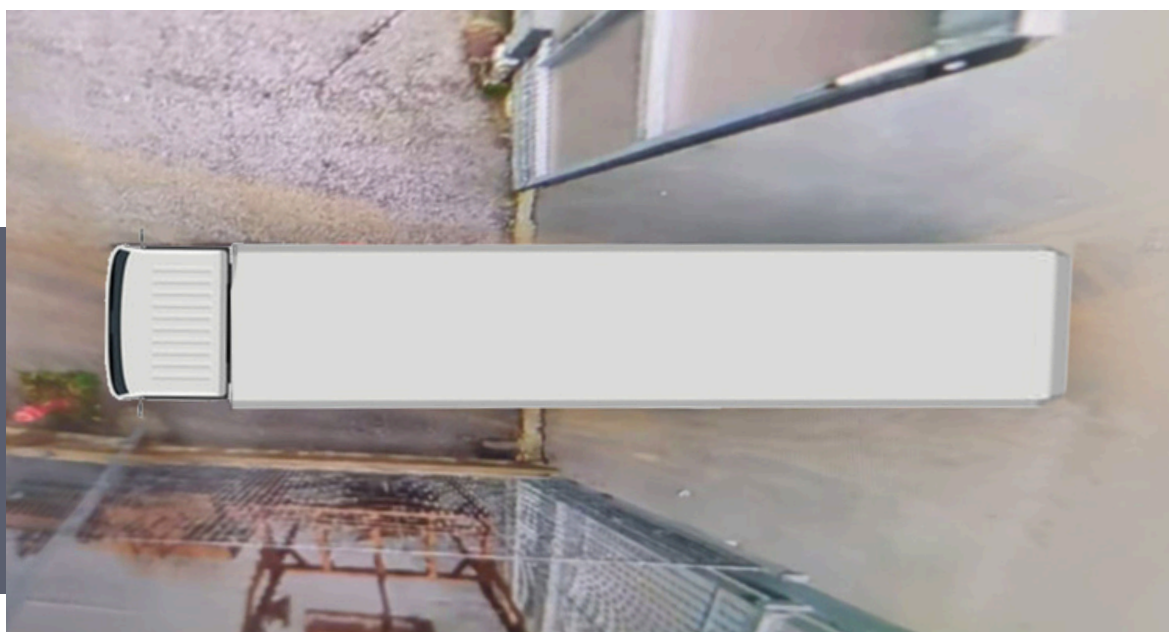


Bird's Eye View

BEV visualization is composed by appropriately distorting and stitching **4 camera streams**, resulting in a **real-time top view** of the vehicle and its surroundings.

Leveraging proprietary software algorithms ITEM delivers **distortion-free, real-time BEV** with accurate **distance referencing** and **no blind spots**, providing operators with 360° view around asset.

Camera positioning diagram



Depth Vision

ITEM produces **custom depth camera systems** with 1, 2, or multiple cameras, depending on specific needs. These camera detect the tracked assets position on the 3 axis. In particular:

■ Mono3D

Our exclusive proprietary **Single-Camera** Depth-sensing technology is designed to detect the spatial position of **assets with known dimensions** with precision up to 1 cm at 3-4 meters distance.

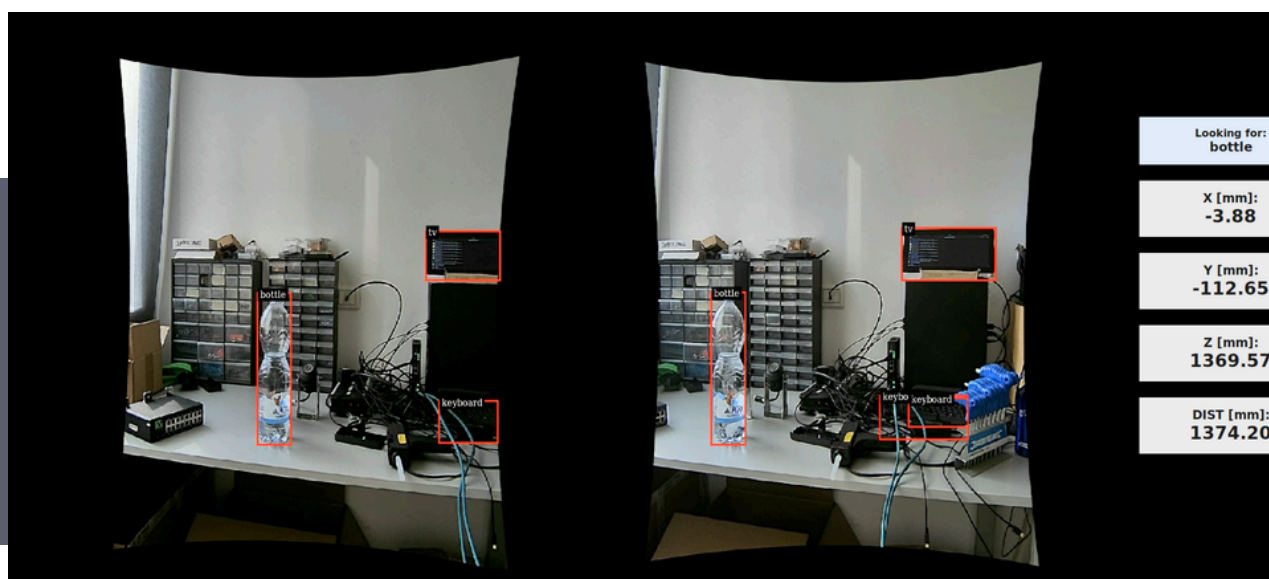
■ Bi3D

Dual-Camera Depth System is designed to detect the spatial position of **any asset**, regardless of its size or shape.

Powered by custom trigonometric algorithms, compensating lens distortions and mechanical misalignments, it provides high-precision depth estimation with **millimeter accuracy**.

Solutions involving more cameras can be designed to address specific needs, like measuring position of objects all around the asset.

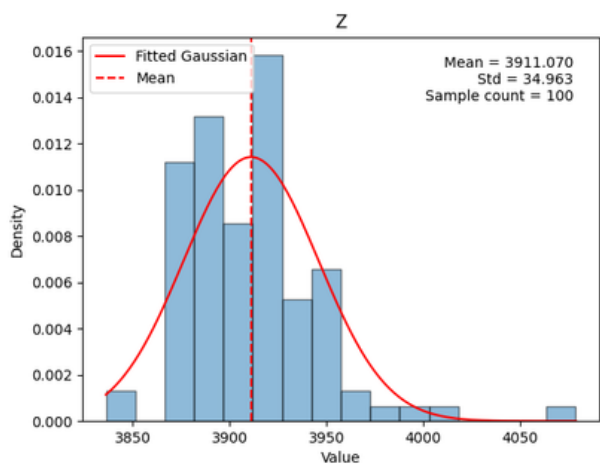
Thanks to the quality of the hardware, the flexibility of the mechanical design and the proprietary software, our **depth measures** are much more **precise** and **reliable** compared to similar solutions from other suppliers.



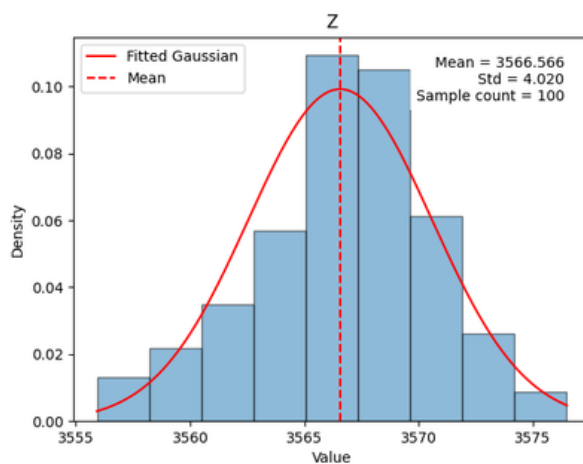
Here an **accuracy comparison** on the **Z axis** measurement (the most error-sensitive one) of our cameras w.r.t. competitors.

It can be seen how our measures are the most consistent, and scoring lowest standard deviation value, with **relative error** below **0.1%** for Bi3D.

Luxonis DepthAI results

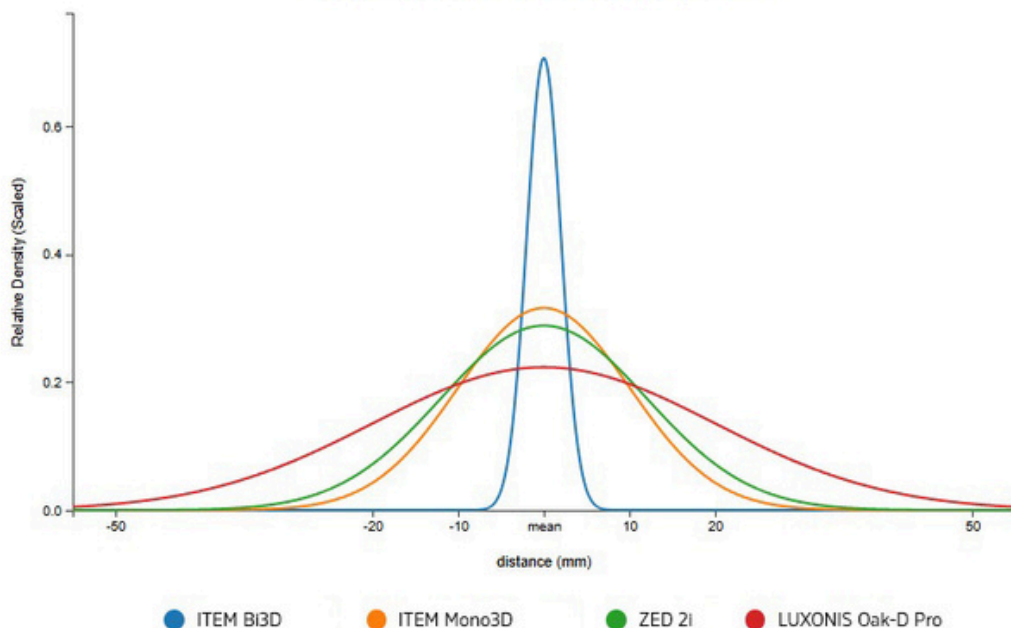


Mono3D results



STD Comparison

Comparison of Distribution Spread by Device



Proud member of the Industrial Group

ITEM GROUP



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