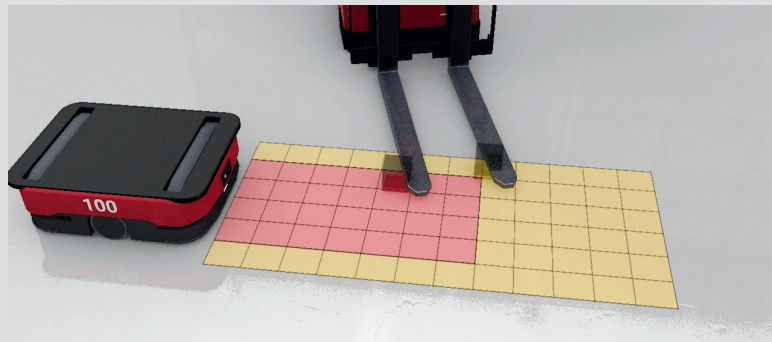# TOPOSENS

ECHO ONE®

inspired by nature

Does your mobile robot struggle to detect objects such as forklift forks, especially on the ground and in unfavourable lighting conditions?

The **Toposens ECHO ONE®** system empowers your mobile robot with a **best-in-class 3D anti-collision system**, so you can build and use the **safest and most reliable mobile robots in the market.**
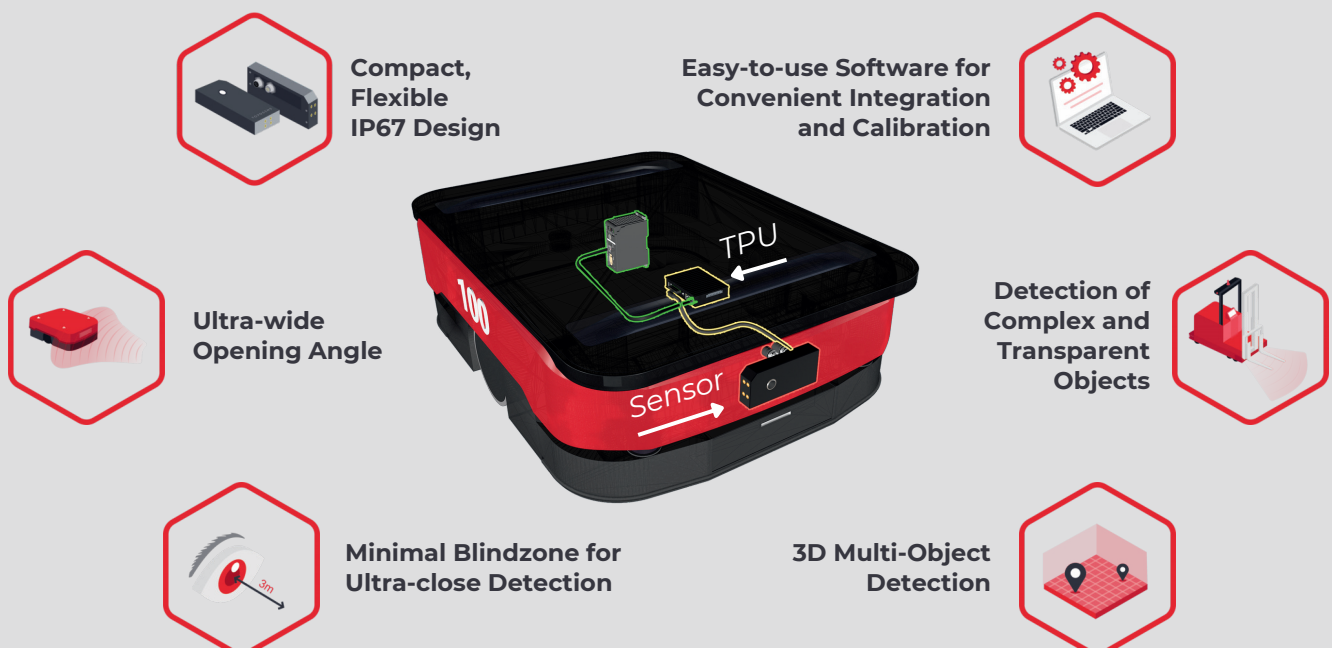
Detecting the Undetectable:
Due to the physics of ultrasound and based on our proprietary 3D ultrasonic echolocation technology inspired by bats, the Toposens 3D Collision Avoidance System enables your mobile robot to reliably detect even the most complex objects, such as:

- **forklift forks**
- **objects at ground-level**
- **even glass and mirrored surfaces**

It can be integrated into a new system as a **design-in** or added to an existing application as a **retrofit solution**.

Key Benefits.

Compact, Flexible IP67 Design

Easy-to-use Software for Convenient Integration and Calibration

TPU

Ultra-wide Opening Angle

Sensor

Detection of Complex and Transparent Objects

Minimal Blindzone for Ultra-close Detection

3D Multi-Object Detection

Plug & Play Solution.

The system consists of the ground-breaking **3D Ultrasonic Echolocation Sensor Toposens ECHO ONE®** and the **Toposens Processing Unit (TPU)**, providing reliable data filtering and 3D collision avoidance functionality, **increasing the ROI of your mobile robot**.

The Toposens ECHO ONE® sensor can detect objects other sensors such as LiDARs and cameras oftentimes struggle to detect, due to the physical limitations of optical sensing.

With the **smallest blind zone** compared to other types of sensors and an **ultra-wide opening angle ("Field-of-View")**, the Toposens ECHO ONE® helps you **reduce costly accidents and downtimes whilst ensuring highest safety in any environment.**

The TPU acts as a gateway between the sensor and the control units of your mobile robots, serving the need of **easy adoption and integration into your application.**

Featuring a set of **sophisticated filters**, it enables you to pre-filter the point cloud obtained by the sensor and displays it in a GUI. The 3D collision avoidance functionality is activated by setting threedimensional, adjustable warning- and stop zones.

Operating Modes.

STAND ALONE:

In stand alone mode, the system switches I/O ports and triggers commands to the robot directly, depending on which zones are activated:
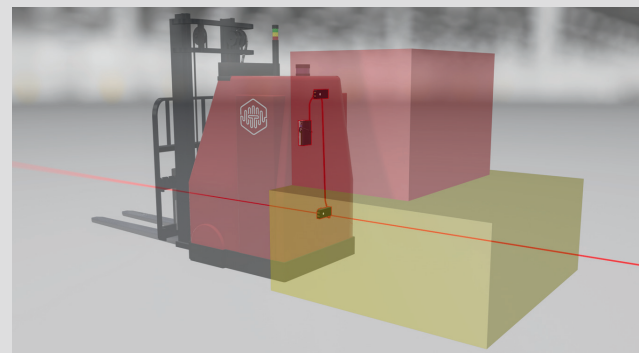
Yellow warning zone: slow down
Red stop zone: come to a halt
No zones: drive on

SENSOR FUSION:

In sensor fusion mode, the processed point cloud is accessed via ethernet and fused into existing collision avoidance system.

Specifications.

Communication Interface	**ETHERNET: 1 x 100 Mbps, 1 x 1000 Mbps, 2 x RJ45 connector** **DIGITAL I/O: 4 x digital inputs, 4 x digital outputs**
3D Detection Range	**200 mm to 3000 mm (Near-field mode < 200mm)**
Frame Rate	**~ 20 Hz typical. (with MMM <20 Hz)**
Field-of-View	**±70° Horizontal (±55° when Target Distance to sensor >100 cm)** **±70° Vertical (±55° when Target Distance to sensor >100 cm)**
Range Resolution	**Typical Accuracy: ± 6 cm (opening angle upto ±60°)**
Dimensions	**SENSOR: 125 mm x 56 mm x 42 mm (excl. Cable)** **TPU: 113 x 85 x 25 mm**
Weight	**SENSOR: 180 g (excl. Cable)** **TPU: 240 g**
Enclosure Material	**SENSOR: PA 6 with 30% glass fibre** **TPU: Aluminium housing**
Ambient Temperature Range	**SENSOR: -10 °C to 50 °C** **TPU: -40 °C to 80 °C**
Operating Voltage Range	**10V - 30 V DC**
Power Consumption	**5.3 W**
Response Time **(without MMM mode active)**	**200 ms**
Working Frequency	**40 kHz ± 1 kHz**

Get in Touch.

Data subject to change.

TOPOSENS
A MEYSENS BRAND

MADE IN GERMANY

Made and designed
in Germany.