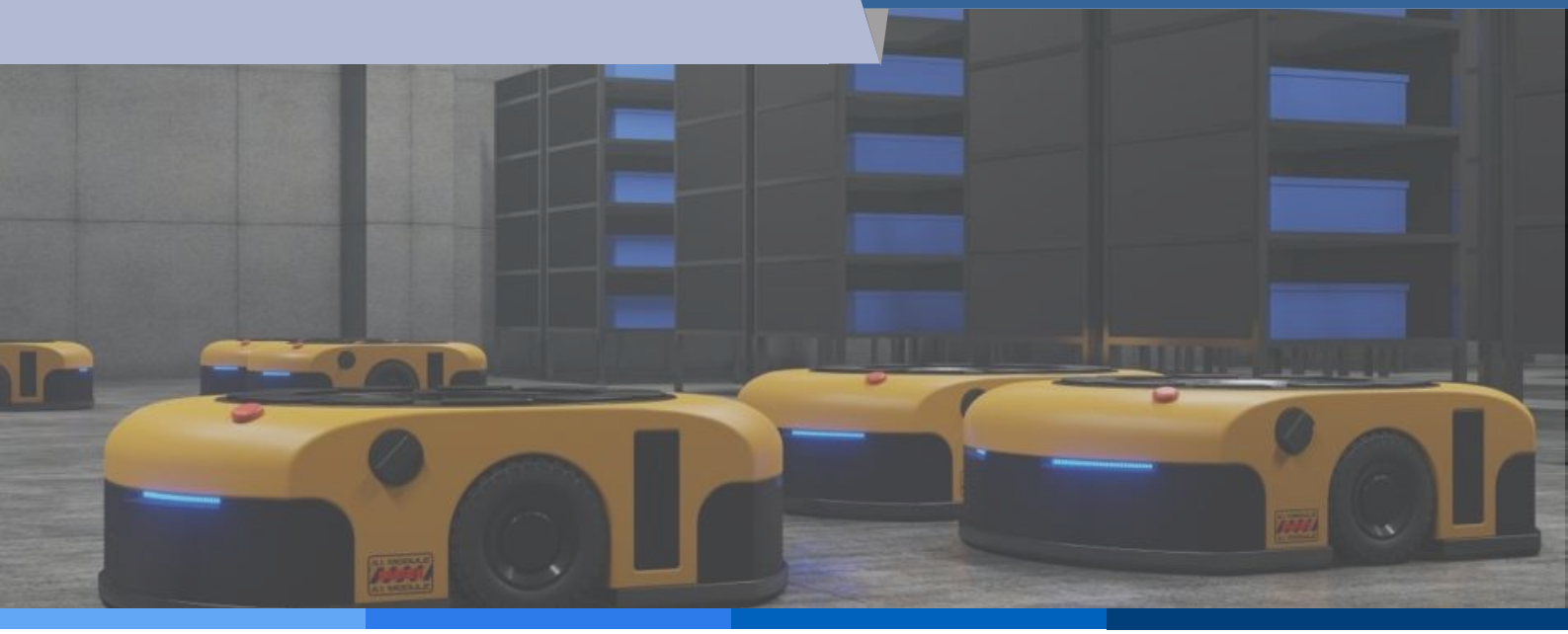
AGV Obstacle Avoidance Application



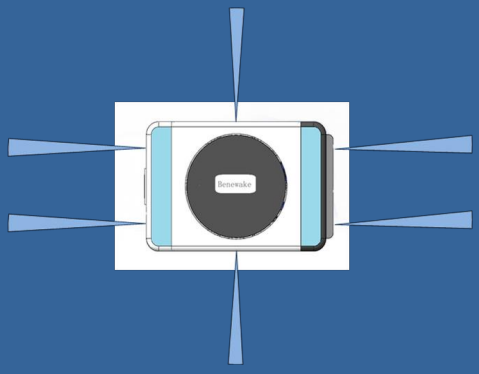
Application Overview

AGV obstacle sensors are including ultrasonic, infrared, LiDAR and visual, etc. Each one of them are difference: Infrared is cheap and cannot detect black object. Ultrasonic can detect glass and the acoustic wave has poor controllability may cause false alarm. LiDAR has better controllability but may penetrate glass. Visual cost higher than any other sensors and cannot detect blind areas.

Benewake are specialized in single-point and 3D directional obstacle avoidance for AGV. LiDAR is a non-contact, based on Time of Flight principle measurement equipment. It will out put the distance of the nearest objects.

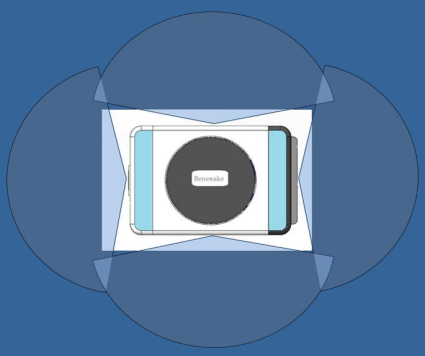
LiDAR Installation of AGV

Single-point LiDAR obstacle avoidance



Single point LiDAR is installed in fixed position around AGV to detect obstacles in a range of 0.1m-12m. It outputs the distance of the nearest obstacle to guide the system to brake or decelerate. It is the best reliable and low-cost safety scheme for mobile robot / AGV.

3D LiDAR obstacle avoidance



3D solid-state LiDAR is installed in forward direction of AGV at a range of 0.1m-4m. It outputs the distance or point cloud of the nearest obstacles in FoV 132 ° * 9 °. It is the preferred cost-effective scheme for low-level and fixed path navigation AGV obstacle avoidance.

Case Study

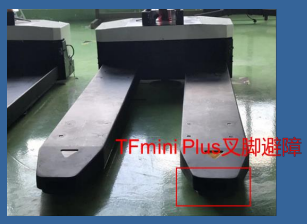
Logistic AGV

CE30 is installed in front of the AGV and monitor the obstacles ahead, Then AGV will slow down or brake after got the distance feedback from LiDAR.

Stereoscopic warehouse

Two TFmini Plus are installed at front and back of AGV. They detect obstacles and assist the deceleration or emergency stop of AGV.

Storage forklift



TFmini plus is installed in front of forklift legs, and the distance of obstacles ahead is fed back to forklift. Anti-collision or auxiliary positioning is carried out.

Customers Benefits

It help you manage your warehouse run safety and efficiency. LiDAR has high accuracy with stable structure.

Small size, light weight and easy to integrated. Plug and play with lower power consumption.

Cost-effective. optimize the measurement capability in outdoor , high light, complex reflectivity background.

Small spot light. No false alarms such as echo interference or uneven ground.

Performance

Products	 TF-Luna	 TFmini-S	 TFmini Plus	 CE30-A/C	 CE30-D
Range	0.3-8m@90%reflectivity	0.1-12m@90%reflectivity	0.1-12m@90%reflectivity	0.1-4m@90%reflectivity	0.1-28m@90%reflectivity
Accuracy	±6cm@(0.2-3m) ±2%@(3-8m)	±6cm@(0.1-6m) ≤1%@(6-12m)	±5cm@(0.1-5m) ±1%@(5-12m)	4cm	4cm
FoV	2°	2°	3.6°	132°*9°	60°*9°
Interface	UART、I²C	UART、I²C、I/O	UART、I²C、I/O	CAN/TCP	UDP
Power	≤0.35W	≤0.7W	≤0.55W	≤6W	≤8W
Frequency	1-125Hz	1-1000Hz	1-1000Hz	20fps	20fps
Protection	N/A	N/A	IP65	IP65	IP65
Volume	35mm*21.2mm*12.5mm (L*W*H)	42mm*15mm*16mm (L*W*H)	35mm*18.5mm*21mm (L*W*H)	79mm*47mm*50mm (L*W*H)	83mm*57mm*54mm (L*W*H)

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