

From Static to Smart: Enhancing In-Store Advertising with 3D Lidar-350



A retail store faced common operational challenges including long checkout lines during peak hours, missed sales opportunities, and difficulties in optimizing product placement and promotion effectiveness. Traditional door counters provided only basic entry/exit data, offering minimal insight into customer behavior.

The Solution: Implementing the 3D Lidar-350 TOF Sensor System

FreshMart chose to implement the 3D Lidar-350 TOF sensor system for its unique advantages in a grocery store environment:

***Accuracy in High-Traffic Areas:** Grocery stores experience constant movement and varying crowd densities. The 3D Lidar-350's millimeter-level accuracy, combined with its dedicated people counting algorithm and resistance to multi-path interference (caused by reflective surfaces like refrigerators and metal shelving), ensured reliable counts even during peak shopping times. This was crucial for accurate staffing decisions.

***Privacy Considerations:** In a public space like a grocery store, privacy is paramount. The 3D Lidar-350's depth-sensing technology, which avoids capturing identifiable images, addressed these concerns effectively, reassuring customers and complying with privacy regulations.

***Zone-Based Analysis:** Unlike simple door counters, the 3D Lidar-350 allowed for zone-based monitoring. Sensors were strategically placed in key areas like produce, dairy, and checkout lanes. This provided granular data on customer movement within the store, revealing popular areas, bottlenecks, and dwell times.

***Resistance to Ambient Light Variation:** Grocery stores often have varying lighting conditions due to large windows, fluorescent lights, and refrigerated displays. The 3D Lidar-350's resistance to ambient light ensured consistent accuracy regardless of these variations.

The Results:

***Optimized Staffing and Checkout Efficiency:** By analyzing peak traffic patterns in checkout lanes, FreshMart adjusted staffing schedules to minimize wait times. This significantly improved customer satisfaction and reduced lost sales due to customers abandoning their carts.

***Improved Product Placement and Promotion Effectiveness:** The zone-based data revealed that customers spent more time in the produce section but often bypassed the adjacent prepared foods section. By strategically relocating some popular prepared food items closer to the produce area, FreshMart saw a 10% increase in prepared food sales. They also used the data to measure the effectiveness of end-cap displays and promotional signage, optimizing product placement for maximum impact.

***Reduced Shrinkage:** By monitoring traffic patterns in high-value product areas, FreshMart was able to identify areas prone to congestion and potential theft. They then made adjustments to store layout and staffing to improve visibility and deter shrinkage.

Why the 3D Lidar-350 was the Right Choice:

The 3D Lidar-350's combination of accuracy in crowded environments, privacy preservation, zone-based analysis capabilities, and robustness in varying lighting conditions made it the perfect solution for FreshMart. It enabled them to optimize operations, improve the customer experience, and increase profitability through data-driven decision-making. The added benefit of multi-path interference resistance was particularly valuable in the store's complex environment.

Feature	3D Lidar-350 TOF Sensor	Infrared (IR) Beam	Video Analytics	Wi-Fi/Bluetooth Tracking
Accuracy	High (millimeter level), enhanced by people counting algorithm and resistance to multi-path interference	Moderate	High, but depends on camera and lighting	Lower
Privacy	High	High	Lower	Lower
Cost	Mid-range	Low	High	Low to Mid-range depending on the setup
Installation	Relatively easy	Easy	More complex	Can vary
Environmental Sensitivity	Highly resistant to ambient light, works in total darkness. Less sensitive than IR	Sensitive to ambient temperature changes, sunlight, and other heat sources	Affected by poor lighting, shadows, and occlusions	Affected by signal interference and building materials
Data Provided	Count, direction, potential for 3D point cloud data	Basic count	Count, direction, dwell time, path tracking (advanced)	Estimated count, dwell time, movement patterns

Product specification sheet

Classification Name	Classification Name	Classification Name
System Parameter	Site environment	Indoors, outdoors
	Anti-glareinterference degree	90k lux
	Operating temperature	'-20℃~60℃'
	Safety class	Laser Class 1
	Protection grade	IP66
	Certification	CE、FCC
	Size	142mm x 68mm x 32.8mm
	Device IP	192.168.31.100
Electric Parameter	Communication interface	Million Ethernet interface
	Power interface	DC5521
	Supply voltage	12-24V
	Rated power consumption	6.43W
TOF	Resolution	320x240
	Frame rate	20fps
	FOV	98°x 80°
	Wave length	940nm

Product specification sheet

Average power consumption	12-24V
Average current	0.9A
Peak current	3A
Rated voltage	12V
Average power consumption	12V
Average current	9V
Peak current	24V
Rated voltage	Not directly connected

Product specification sheet

Operating temperature	'-20℃~60℃'
Storage temperature	'-40℃~80℃'
Protect grade	IP66

Product specification sheet

Classification Name	NO	Output
Hardware interface	(1)	DC-5521power supply interface
	(2)	2Pin Suspended
	(3)	RJ45 Million Ethernet interfaces
	(4)	DI、DO、RS485

ABOUT AUTOMATEMATRIX

Welcome to AUTOMATEMATRIX, where we're engineering the future of intelligent sensing and automation. We're passionate about developing cutting-edge technologies that empower businesses to operate more efficiently, safely, and intelligently.

FOR MORE INFORMATION,PLEASE VISIT:WWW.AUTOMATEMATRIX.COM