smartmicro
SMART MICROWAVE SENSORS

TRUGRD® Line

Premium Radar Sensors for Traffic Management

24 GHz
Frequency
To use worldwide and meets the requirements of a variety of local regulations.

The smartmicro TRUGRD Premium Line delivers unmatched detection performance. It includes high-resolution radar sensors, with or without integrated camera, that detect and track vehicles, pedestrians, and cyclists simultaneously, in multiple lanes and directions. All sensors are maintenance-free and deliver ultra-precise real-time data even in complete darkness or harsh weather conditions.

Safety of VRUs | Intersection Management | Highway Management | Smart Cities

TRUGRD

Outperforms Competitors in Accuracy and Reliability.
The sensor is ideal for intersection, highway management and enforcement applications. With a field of view of 110° the sensor can monitor up to 12 lanes and 256 objects simultaneously.

TRUGRD Stream

3D/UHD+ Radar Technology Combined with Video.
TRUGRD Stream is an all-in-one solution combining the benefits of radar and video.
Its integrated camera with supreme low-light performance provides live-streaming video for traffic management purposes.

TRUGRD Stream Hybrid

Combines High-Definition video with Radar Sensors to Enhance Stop Line Vehicle Detection at Signalized Intersections. This all-in-one, fully integrated solution enables safer and more efficient traffic flow, optimized for fast deployment with minimal impact on infrastructure.

Where to use ?

Urban & Intersections
Stop bar detection, advanced presence, dilemma zone protection, wrong-way detection, multimodal tracking (vehicles, bicycles, pedestrians)

Highways & Tunnels
Vehicle classification and counting, queue detection, incident detection, shoulder lane monitoring

Enforcement
Red-light enforcement, speed enforcement, average speed section control

Smart City Projects
Infrastructure-to-Vehicle communication, multimodal traffic management, data collection and analysis

Key Features

All TRUGRD Sensors share the following core features:

3D/UHD+ Radar Technology
for precise object position, speed, direction, and elevation

Simultaneous Multi-Lane, Multi-Object Tracking
of up to 256 objects in up to 12 lanes

Robust and Maintenance-Free Design (IP67, -40 °C to +74/80 °C)

Worldwide Certified 24 GHz Technology
with minimal power consumption

Integrated Self-Monitoring Features
Radar misalignment detection, sensor self-calibration, blind zone alerts, rain level measurement

Why Choose TRUGRD Sensors?

- **Best-In-Class Detection** performance with UHD+ resolution
- **Fail-Safe Traffic Management:** full object detection under all environmental conditions
- **Multimodal Tracking** for Smart City and V2X applications
- **Flexible & Scalable** choose the right model for your use case and upgrade when needed
- **Reduced Cost of Ownership** no maintenance, low power, fewer devices required
- **Future-Proof Integration** with smartmicro's COM HUB and Traffic WEB UI software tools

GET IN TOUCH
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	TRUGRD	TRUGRD Stream	TRUGRD Stream Hybrid
CAMERA MODULE		Color camera with IR cut filter and supreme low light performance	
Resolution, Frame Rate		1920 x 1080 px, up to 30 fps	
Video Codec		H.265, H.264, MJPEG	
Embedded Video Analytics		no	yes
PERFORMANCE			
Operating Frequency		24.0 ... 24.25 GHz[1]	
Resolution		3D measurement with UHD+ resolution	
Detection Range Pedestrian		125 m | 410 ft	
Detection Range Passenger Car		260 m | 853 ft	
Detection Range Truck/Bus		300 m | 984 ft	
Min. Detection range (at 6m/20ft installation height)		14m | 46 ft	
Range Separation		2 m | 6.6 ft	
Range Accuracy		< ± 0.25 m | < ± 0.82 ft	
Speed min ... max		-320 ... +320 km/h | -199 ... +199 mph	
Speed Separation		0.23 m/s	
Speed Accuracy		< ± 0.1 m/s	
Number of Lanes		Up to 12 for highway management, up to 8 for intersection management	
Field of View Azimuth (horizontal)		110°	
Field of View Elevation (vertical)		20°	
Angle Separation Azimuth		< 6°	
Angle Accuracy Azimuth		< 0.5°	
MECHANICAL			
Weight	1290 g | 45.5 oz	1575 g | 55.5 oz	
Dimensions		213 x 155 x 32 mm or 8.4 x 6 x 1.3 in+ connector	
GENERAL			
Update Cycle Time		50 ms[2]	
Operating Voltage / Power Consumption	7 ... 32 V / 9.5 W	7 ... 32 V / 11 W	
Operating Temperature	-40 ... +80°C or -40 ... +176°F	-40 ... +74°C or -40 ... +165°F	
Interfaces	RS485 full duplex; Ethernet 10/100; 1x CAN V2.0b (passive)	Ethernet[3]	
Connector		Hirose LF10 series	
IP		67	

[1] In certain regions, frequency intervall starts at 24.05 GHz.
[2] Depending on the application - Speed Enforcement 50 ms; Intersection and Highway Management 100 ms.
[3] Necessary for video output.
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Please refer to the datasheets on our website for more / the latest information.

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