

SWARCO ITS

Smart LiDAR

High-performance 3D traffic detection and object fusion at the edge



See more. Understand more.
Control traffic with confidence.

Powers Smart AI intersections with coordinates, direction and speed. SMART LiDAR combines two 3D LiDAR sensors with SWARCO Smart Fusion software on an NVIDIA Jetson Orin Nano Super edge platform. The result is a unified, real-time view of traffic movements - processed locally and ready for traffic control, monitoring and analysis.

Our integrated solution



Dual LiDAR sensing

Two sensors cover a typical intersection and capture the complete 3D traffic scene.



NVIDIA edge processing

Point-cloud data is processed locally in real time on the NVIDIA edge platform.



Smart fusion

Objects are detected, classified and tracked with coordinates, direction and speed.



Smart AI

Advanced detection data is delivered directly to Smart AI for adaptive traffic control.

Designed for modern traffic management

- **Reliable 3D detection:** Detect and track vehicles and other road users within the configured area.
- **One coherent traffic scene:** Fuse both sensor views to reduce complexity and deliver structured object information.
- **Edge-based operation:** Process data locally for low latency and reduced dependence on external connectivity.
- **Flexible deployment:** Configure detection zones and adapt the solution to the geometry and objectives of the site.

From sensor data to actionable insight

- 1. Capture:** Two LiDAR sensors continuously capture the 3D traffic environment.
- 2. Process:** The NVIDIA edge platform processes the sensor data locally.
- 3. Fuse:** Smart Fusion detects, classifies and tracks traffic objects.
- 4. Connect:** Object coordinates and speed can be delivered directly to Smart-AI.

Proven across markets

More than 30 systems installed in Denmark, Finland, Iceland, Norway and Sweden - with further deployments being prepared internationally.

Turn 3D perception into smarter traffic decisions

Traffic insight beyond basic detection



Object classification

Classification of 11 road-user and vehicle types.



Red-light running

Detection of vehicles entering on red.



Near-miss analysis

Identification and analysis of critical interactions.



Traffic performance

Presence, counting, trajectories and queue information.

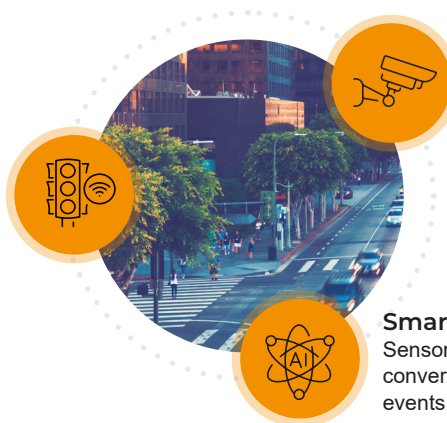
Technical overview

From dual-sensor perception to structured traffic intelligence

System architecture

NVIDIA jetson orin nano super

Local edge processing with up to 67 TOPS, a 1,024-core Ampere GPU and 32 Tensor Cores.



2 × 3D LiDAR sensors

Only two sensors are required to cover a typical intersection and capture highdensity 3D point-cloud data.

Smart fusion software

Sensor observations are aligned, fused and converted into tracked traffic objects and events.

Object classification

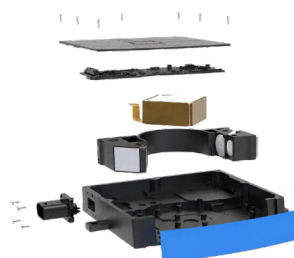
smart fusion supports classification of 11 road-user and vehicle types. the class structure below is preliminary and will be refined in a later product update.

Technical details: Product name

01 Pedestrian	02 Bicycle	03 Motorcycle	04 Car
05 Car with trailer	06 Van	07 Minibus	08 Bus
09 Truck	10 Truck with trailer	11 Heavy vehicle	



Edge computer



3D LiDAR sensor

Traffic events and safety analytics



Red-light running

Detection of vehicles entering or crossing the configured stop-line zone during a red signal.



Near-miss detection

Identification of critical interactions and potential conflicts between tracked road users.



Queue information

Measurement of queue formation and development within configured detection areas.



Presence & counting

Lane-level presence, counting and movement information.



Trajectories

Continuous tracking of object position, direction and movement through the scene.



Pedestrian movement

Detection of pedestrian presence and direction of movement.

LiDAR specifications / per sensor

SCANNING CHANNELS 192	SCANNING FREQUENCY 10 Hz	DETECTION RANGE 200 m @ 10% reflectivity 300 m maximum	FIELD OF VIEW 120° horizontal × 25° vertical
ANGULAR RESOLUTION 0.15° horizontal 0.13° vertical	RANGE ACCURACY ±30 mm @ 1σ	ENVIRONMENT IP67 / IP6K9K -40°C to +85°C	SIZE & POWER 134 × 109 × 30 mm 0.7 kg · 9–24 VDC · 15 W typical

Edge computer specifications / 8 gb version

AI PERFORMANCE 40 TOPS standard 67 TOPS Super Mode	GPU 1,024-core NVIDIA Ampere GPU 32 Tensor Cores	CPU 6-core Arm Cortex-A78AE 64-bit	MEMORY & STORAGE 8 GB 128-bit LPDDR5 · 68 GB/s 128 GB SSD
NETWORK 2 × RJ45 Gigabit Ethernet PoE optional	USB & DISPLAY 2 × USB 3.2 Type-A · 2 × USB-C 1 × HDMI 2.0	INDUSTRIAL I/O RS232 · RS485 · CAN-FD 4 × GPIO	POWER & ENVIRONMENT 9–24 VDC · -20°C to +70°C 160 × 100 × 50 mm · 1.84 kg typical