

Why multifunctional sensors are the future of traffic management

A modern radar sensor is capable of delivering an all-in-one traffic management sensor solution that provides a database for smart cities. A single sensor from smartmicro, for example, can precisely measure the position, lane and speed vector, as well as the elevation of the objects in the field of view, across all lanes. The radar can be simultaneously used for adaptive intersection control, as well as collecting statistical data such as counting and object classification.

Enabling smart cities

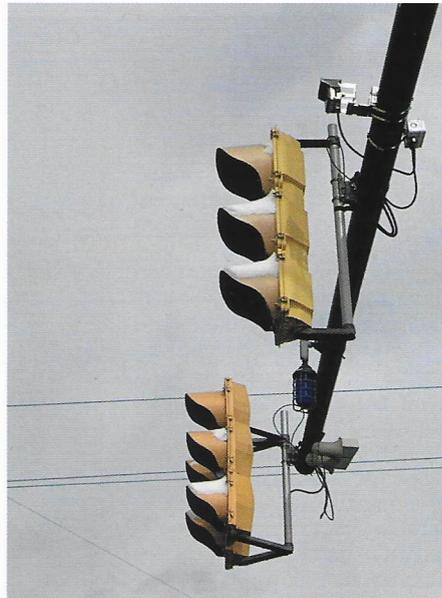
When smartmicro radars are installed at intersections, cities get a future-proof traffic management sensor that allows multilane, multi-object detection on straight and curved roads. By using microwave technology, the radars can deliver key information based on big data, such as estimated times of arrival (ETA), stop bar and advance detection, detailed vehicle counting options, and an object classification that can recognize pedestrians and bicycles.

The implementation of an adaptive traffic signal control results in truly smart intersections with signal phase extension where needed.

Modern traffic radars detect moving and stopped traffic and use queue length measurements to determine the optimum traffic light phase duration. This can all be done with a single forward-firing radar sensor per road approach. This can help cities achieve fewer unnecessary stops in traffic and less congested streets, which in turn reduces CO₂ levels as well as optimizing travel times for all road users.

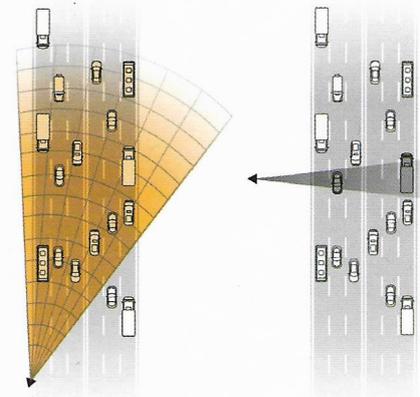
Looking to the future

Today there are two common traffic radar technologies:



Left: A smartmicro multifunctional sensor UMRR-11 installed at an intersection

Below: smartmicro's forward firing technology versus side firing



Need to know

Benefits of smartmicro's multilane traffic management radar technology include:

- > 4D/HD resolution
- > Sensors for end users and for OEM integration
- > Infrastructure sensors for smart cities with V2X functionality
- > Setup software and accessories
- > Suitable for use in intersection management, arterial management and enforcement

forward-firing and side-firing. While side-firing radars need to be installed at the side of a road and often come with additional poles, forward-firing radars can be installed on existing infrastructure alongside the road – for example, on poles,

gantries, mast arms, bridges and street signs. This is especially handy when installing the devices in cities – where existing infrastructure is fixed and limited. The forward-firing radar's mounting position means that forward-firing radars can be integrated seamlessly in present infrastructure without additional construction work.

Unlike side-firing sensors, which have narrow beams, forward-firing radars use multiple beams. This brings many advantages: all objects remain inside the field of view for much longer; and their positions and speed vectors are measured with much higher accuracy. At an intersection, for example, one single forward-firing radar is able to provide stop bar and advance detection.

Road safety for everyone

The latest offering in the smartmicro range of traffic radar sensors is the 4D/HD UMRR-11 forward-firing sensor

device. The compact and lightweight sensor is one of the most cost-efficient radar solutions available on the market. Thanks to the rugged and waterproof (IP67 certified) casing, it is suitable for use in all weather conditions and is easy to install. It can operate in a temperature range of -40°C to 85°C (-40°F to 185°F).

As smartmicro's latest sensors have V2X capabilities, they can share real-time data about traffic signal statuses at intersections. This data can then be transmitted to roadside units and received by V2X-equipped vehicles. This in turn can pave the way for a future in which cars automatically stop at crossings when pedestrians are being signaled to walk. ○

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