



SIEMENS



# Optiguide - Optiboard

A comprehensive range of driver assist systems for buses and trolleybuses

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## Driver assistance for buses and trolleybuses

**In order to meet commuters mobility requirements and encourage car drivers to adopt public transport systems, local authorities want to provide the best possible facilities in terms of accessibility, comfort, travel speed and safety. To meet these requirements, Siemens, the world leader in automatic transport systems, has designed Optiguide and Optiboard. Siemens' optical guidance system brings bus and trolleybus solutions into modern transport schemes, with level boarding and easy accessibility as standard features.**

### Optiguide - Optiboard: a major component of Bus Rapid Transit

The BRT (Bus Rapid Transit) system provides the benefits of rail transport while using bus-type infrastructures. The BRT system's advantages include:

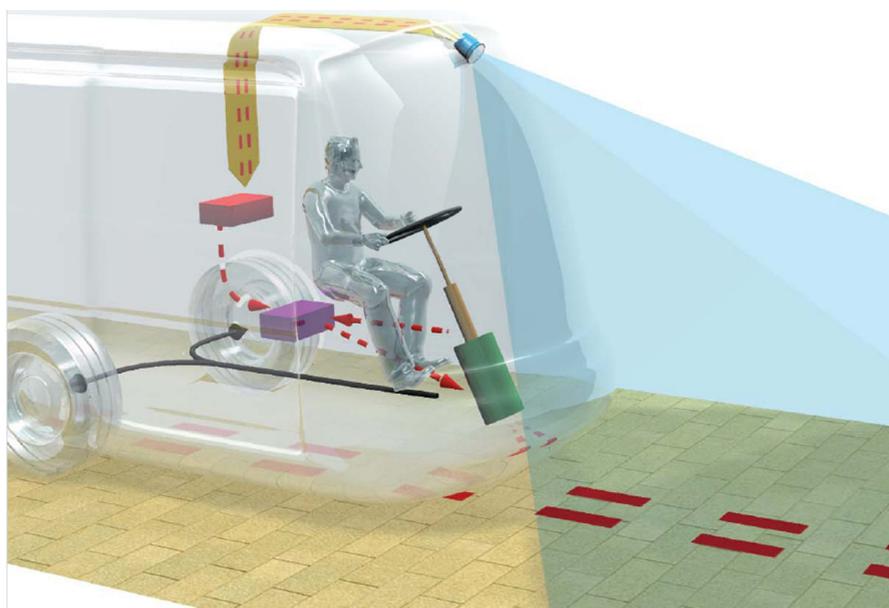
- ◇ dedicated right-of-ways covering all or part of the routes, with priority at traffic lights, for high frequency of service and higher speed in commercial operation,
- ◇ accessible stations and reliable information on the workings of the network,
- ◇ comfortable and elegant driver assist vehicles for accessibility and passenger safety. The Optiboard driver assist system guarantees a high level of service.

### Optimal accessibility and improved safety

More and more passengers want accessibility:

- ◇ persons with restricted mobility,
- ◇ senior passengers,
- ◇ passengers with buggies or wheeled cases,
- ◇ people who appreciate the convenience of having step-free access onto the vehicle.

Optiguide-Optiboard also lets people get on and off at high platforms (23cm to 30 cm).



A camera located on the front of the vehicle reads the route; it analyses the divergence between the markings on the ground and the vehicle's position. An interface based on using the steering wheel helps the driver narrow this divergence.

Optiguide-Optiboard can be fitted onto any type of bus, irrespective of its length (12 m, 18 m or 24 m). It is particularly well suited to lines with stations with high platforms (23 to 30 cm).



Optiboard is a tried and tested guidance mode. This system derives from the Optiguide guidance system, which has been in service in Rouen since 2001. It is currently fitted to a fleet of over 100 vehicles made by various manufacturers.

Optiguide-Optiboard enables vehicles to be driven very close to the platforms, along an accurate and safe trajectory. Thanks to Optiboard, the gap between the door steps and the platform is optimized, at less than 2 inches. Precision docking is provided for each stop throughout the service life, with a level of availability of over 99.98%. Step-free access does away with the need for a foldaway ramp, reduces alighting and boarding times at the stations, and increases the commercial running speed.

#### Enhanced comfort for passengers and drivers

Thanks to its technology, Optiguide-Optiboard enhances passenger comfort by providing smoother driving and docking sequences, journeys without jerks, and easier access at the stations. During the station approach phase, drivers can focus on watching the vehicle environment, and ensuring passenger safety and comfort. It makes the vehicle easier to drive. The system prevents any contact with the platform and supports the driver in various ways:

- ◇ it guides the vehicle along the marked route,
- ◇ helps the driver by assisting with the steering,
- ◇ helps the driver by nudging the steering wheel in response to the vehicle's position,
- ◇ alerts the driver by vibrating the steering wheel.

The driver maintains complete control of the vehicle at all times.

The image processing techniques applied ensure a very high level of safety and considerable resistance to any deterioration in the guidance camera's field of vision or the trajectory marked on the lane surface. A modular interface means that existing fleets, too, can be fitted with its various features, from head-up steering assistance through to audible collision-avoidance warnings.

#### A flexible, upgradeable, economic system

Optiguide-Optiboard provides the benefits of rail transit but faster implementation and lower costs. The trajectory to be followed is materialized by strips of paint. The infrastructure cost per kilometre for a dedicated-lane BRT facility is at least divided by three compared to railway systems. The cost of the on-board equipment comes to between 2% and 5% of the price of a new vehicle. The transitions from manual driving to guided mode, and vice versa, are easy and immediate. Taking a 10 km line as an example, speed in commercial operation is improved by 2 km/h, return on investment is immediate, and operating expenses are reduced by over €3.5 million.

Optiguide-Optiboard can be integrated on all types of vehicles, regardless of manufacturer, and is particularly suitable for lines with platform heights of 23 cm or higher.

Optiguide - Optiboard: an efficient and reliable accessibility solution, which does not discriminate against people with reduced mobility.



## Certifications

ECE-R10 certification under Directive 72/245/EC.

On the recommendation of the French guided transport agency, STRMTG, the Optiguide guidance system holds an operating permit for docking guidance and continuous guidance between stations, under French decree 2003-425.

The Optiboard driver assist system does not fall within the scope of French decree 2003-425 on the safety of guided transport systems.

## Performance

Maximum speed guidance	45 mph (70 km/h)
Guidance accuracy	$\leq 2'$ ( $\leq 50$ mm)
Sensitivity	$\leq 3$ mm
Availability	$> 99.98\%$

## Vehicles

Length	40 ft, 60 ft, 80 ft (12 m, 18 m or 24 m)
Powered by	Diesel, hybrid or trolley – all manufacturers

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