



If another tramcar is driving or stands still in front of the tramcar within its warning area, a system reaction is triggered.



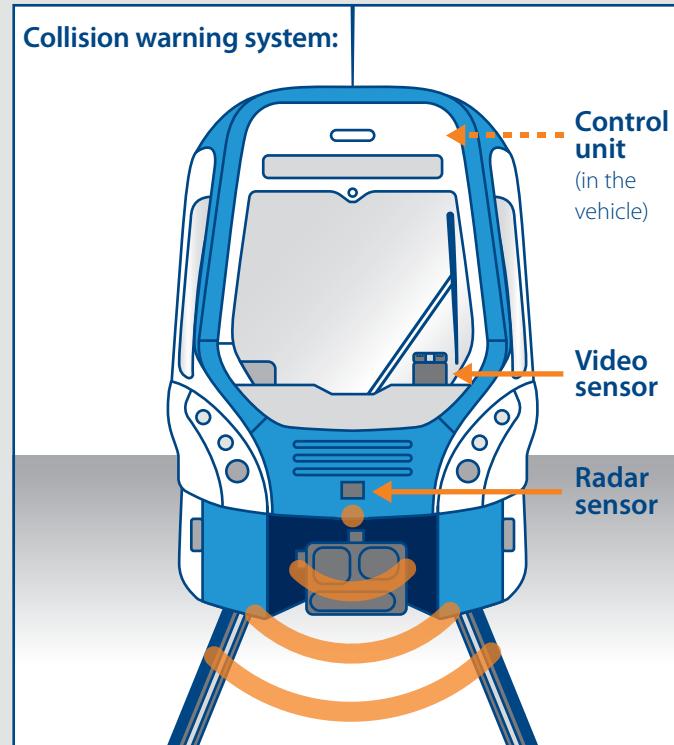
If a truck or a bus is driving or stands still in front of the tramcar within its warning area, a system reaction is triggered.



If a car is driving or stands still in front of the tramcar within its warning area, a system reaction is triggered.



The system can detect upright persons in parameterizable areas in front of the tramcar.



We retrofit your urban rail vehicles effectively with our collision warning system.

#### Contact

If you have any questions or would like further information, please do not hesitate to contact us.

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**KIEPE**ELECTRIC



## Retrofit Collision Warning System



RADAR- AND CAMERA-SUPPORTED DRIVER ASSISTANCE SYSTEM FOR URBAN RAIL VEHICLES

## Product Description

Kiepe Electric's collision warning system is a radar- and camera-supported driver assistance system for urban rail vehicles, which can autonomously initiate service braking if there is an obstacle on the track in front of the rail vehicle. It serves to reduce collisions with e.g. cars, trucks, other rail vehicles and persons being in the structure gauge of the rail vehicle.

The main components of the system are a video sensor, a radar sensor and a control unit inclusive of accessories.

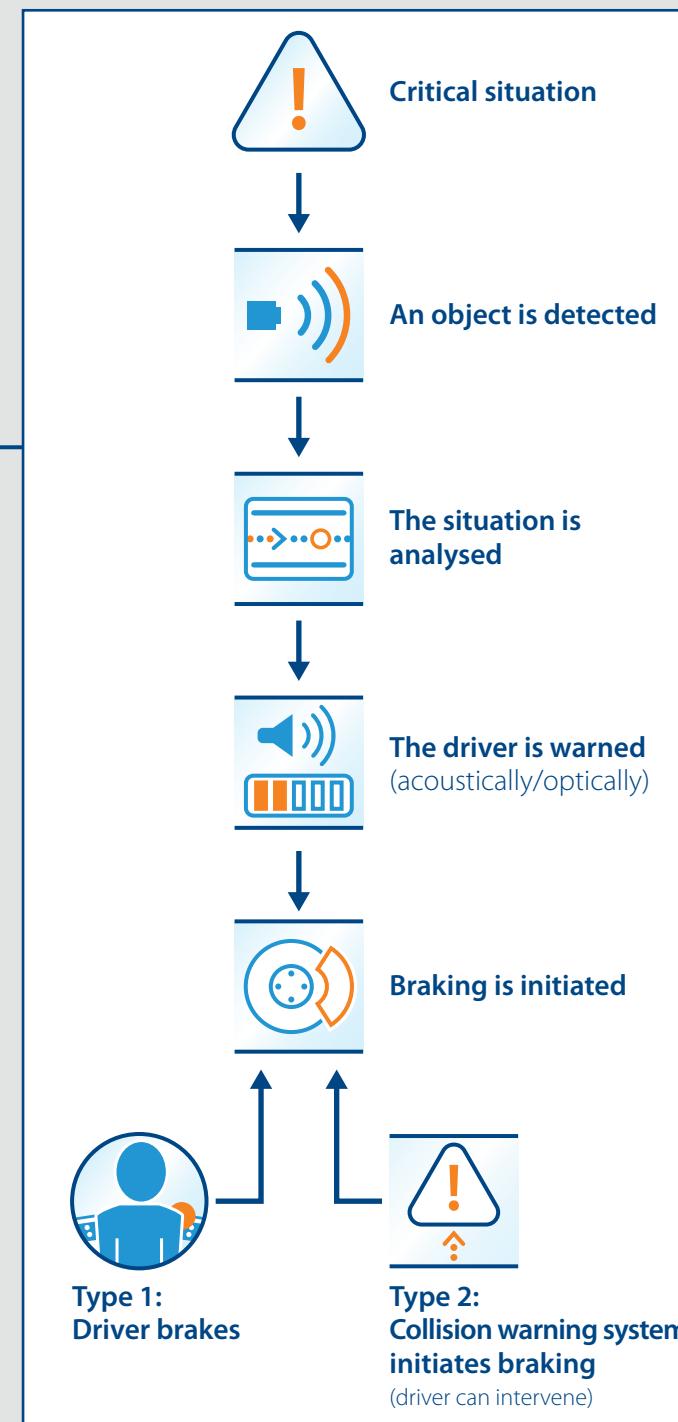
**There are two system variants with different system reactions:**

### Type 1:

System that can trigger an optical and/or acoustic warning.

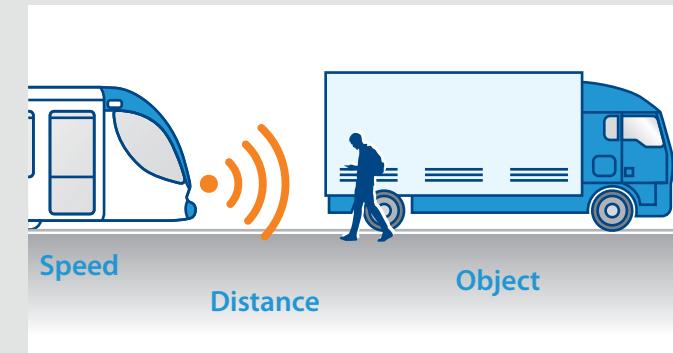
### Type 2:

System that can trigger an optical and/or acoustic warning and release a braking signal.



## Functional Properties

The video sensor detects the rails and their course. It also detects fronts and rears of vehicles as well as persons. The radar sensor detects objects in the direction of travel under all weather conditions. Thanks to these sensor data the system determines which objects might be critical in respect of a collision.



The data produced by the radar sensor and the video sensor are compiled in the control unit, which is the signal interface to the rail vehicle. The driver is then warned early by the system as a function of the speed of the rail vehicle and the resulting braking distance.

The collision warning system is designed for speeds from 0 km/h to 80 km/h. It does not trigger a warning when the rail vehicle stands still. The environment of the rail vehicle is assessed continuously. The control unit outputs an electric signal as long as a situation is assessed as critical.

The system can detect the course of rails in curves with a radius of at least 50–60 m depending on the position of the camera. The system only reacts on objects within the detected course of the rails.

It is important to bear in mind that the system is a driver assistance system. The driver remains fully responsible for the driving of the urban rail vehicle.

