Backup Assistance System
Active collision warning for manned forklift trucks

SICK
Sensor Intelligence.

Advantages

Need-based environment perception

The BAS driver assistance system is based on one or two TiM3xx 2D LiDAR sensors. The sensors feature a field of view of 270°. Thanks to flexible mounting options on the vehicle, your monitored area can be adapted and scaled according to the object detection requirements.

Discover the various mounting options in our interactive 3D tool.

Compared to alternative solutions, the BAS detects both stationary and moving objects.

Scalable monitored area

One sensor alone reliably detects objects behind the manned forklift truck.

A system variant with two sensors is well suited for targeted coverage of blind spots.

The use of two sensors is also recommended in environments with complex travel paths in order to provide optimal protection for lateral areas.

The scalable monitored area enables reliable object detection, thus preventing collisions. This contributes to smooth in-house storage, handling and transport processes in logistics

Detection of stationary and moving objects

**Use of precise LiDAR technology**

The 2D LiDAR based system actively detects obstacles in the path and clearly warns drivers and pedestrians. Unlike tag solutions, no additional sender and receiver cabling is required on the surrounding terrain. Compared to systems based on radar technology, the monitored area for collision warning can be defined more precisely with the BAS, which reduces false alarms.

Three-stage warning concept

The BAS is equipped with a multi-level warning concept consisting of customizable warning fields and a signal light bar that warns the driver of potential collisions with visual and acoustic alarms. The integrated 2D LiDAR sensors only switches to active monitoring when the manned forklift truck is in reverse, preventing false alarms during forward travel.

Actively warns the driver with acoustic and visual warning signals
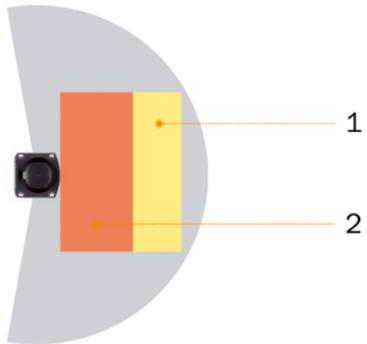
The monitored area is divided into monitoring fields – warning field 1 and warning field 2. The warning fields can be used to monitor various individually adjustable minimum distances to an object.

The signal light bar supports the driver with visual alarms. Green means clear travel path. If an object is detected in warning field 1, the color changes to yellow; if it enters warning field 2, it changes to red. Depending on the monitored area, the lamp emits additional acoustic warning signals via an integrated up to 98 dB buzzer.

➕ **Assistance for the driver with active alerts in real time without false alarms**

Backup Assistance System

Compact stand-alone system

All components of the Backup Assistance System are selected to keep integration time minimal so the vehicle is quickly ready for use again. Included with delivery: Sensors, signal light bars and mounting systems for all parts and connecting cables.

Cost-effective retrofitting

Compatible with different supply voltages, the system solution can be retrofitted to a wide range of vehicles, regardless of manufacturer or year of vehicle.

To make integration into the vehicle easy and installation as quick as possible, there is only one interface to the system – the control unit regulates the voltage supply and switching.

As a result of the low current consumption by the system, the power consumption from the vehicle battery is reduced. Saving charging time and therefore money.

➕ Compact stand-alone system for easy integration and mounting for cost-effective retrofitting

Technical data overview

Application	Indoor and outdoor areas (8 m)
Ambient operating temperature	−20 °C ... +50 °C
Vehicles	Internal combustion engine (IC) / electric forklifts (depending on type)
Monitored area	Vehicle rear end / vehicle rear end / blind spot or side cover (depending on type)
Warning zones	2
Functions	Visual and acoustic collision warning
Scope of delivery	2D LiDAR sensor TiM351 / Control module assembly with power and reverse cable, 3m / Signal light bar with tri-color visual and configurable audible alarm levels up to 98 dB / Mounting kit for sensor and light stack / Connection cables for sensor and light stack, 5m / 2D LiDAR sensor TiM351 (2 x) / Control module assembly with power and reverse cable, 3m / Signal light bar with tri-color visual and configurable audible alarm levels up to 98 dB (2 x) / Mounting kit for sensor and light stack (2 x) / Connection cables for sensor and light stack, 5m (2 x) (depending on type)

Product description

The Backup Assistance System (BAS) minimizes the risk of collisions for manned forklift trucks. It monitors areas of the vehicle which are obstructed from view of the driver. The BAS gives real-time feedback via visual and audible warnings when the forklift truck comes near a stationary or moving object. The compact system is based on a TiM3xx 2D LiDAR sensor that is engaged only when the forklift truck is in reverse, thereby eliminating false alarms when moving forward. The monitored area can be scaled up by adding an additional sensor.

At a glance

- System is activated when reverse is engaged
- Three-stage warning concept with tri-color visual and configurable audible levels up to 98 dB
- Two customizable alert zones per sensor
- Monitored areas scalable with a second TiM3xx LiDAR sensor
- Control unit provides the necessary logic for the sensors and regulates its voltage supply

Your benefits

- Supports the driver when reversing but does not distract him when driving forwards
- Actively warns the driver with acoustic and visual warning signals
- Detects stationary and moving objects – no cabling required between sender and receiver
- Compact standalone system for easy integration and mounting
- Cost-efficient solution for retrofitting on a large number of vehicles thanks to different voltages and electrical systems
- Low power consumption minimizes the power consumption of the vehicle battery

Fields of application

- Prevents accidents
- Interruption free intralogistic processes
- Supports the driver

Backup Assistance System

Ordering information

Other models and accessories ➜ www.sick.com/Backup_Assistance_System

Vehicle	Monitored area	Machine reverse signal voltage	Machine oper- ating voltage	Number of sensors	Type	Part no.
Electric forklifts	Vehicle rear end	24 V 36 V 48 V 60 V 72 V	24 V 36 V 48 V 60 V 72 V	1	BAS3501-E	1117895
	Vehicle rear end Blind spot or side cover	24 V 36 V 48 V 60 V 72 V	24 V 36 V 48 V 60 V 72 V	2	BAS3502-E	1117896
Internal combus- tion engine (IC)	Vehicle rear end	12 V 24 V	12 V 24 V	1	BAS3501-C	1117897
	Vehicle rear end Blind spot or side cover	12 V 24 V	12 V 24 V	2	BAS3502-C	1117898

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

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