

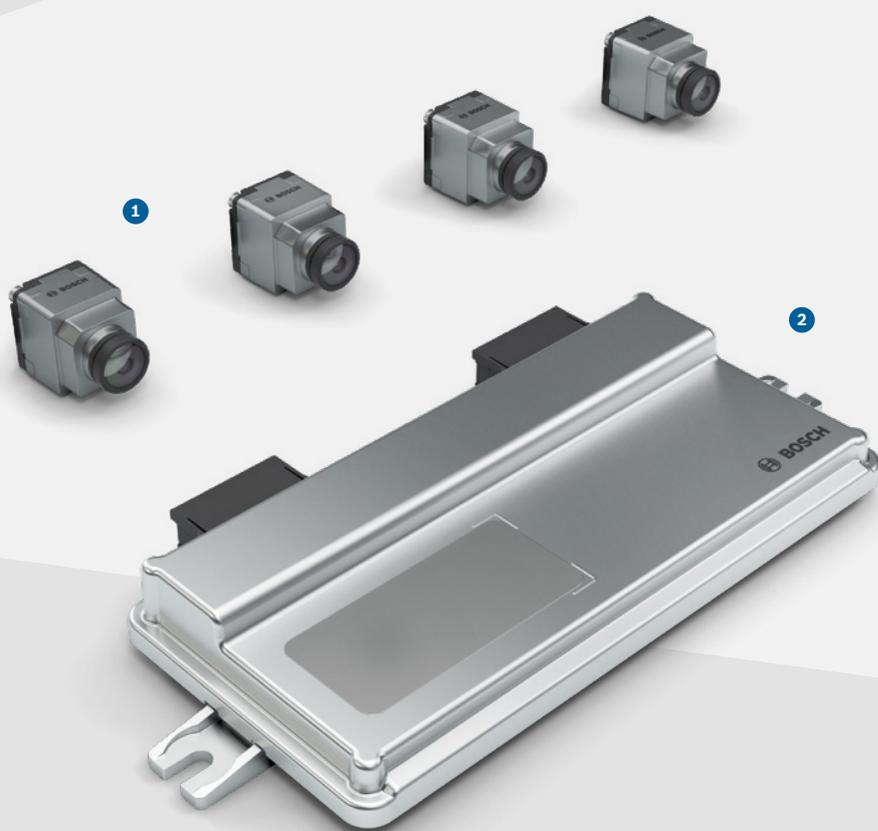
Video-based driver assistance systems for industrial trucks and off-road vehicles

Multi-camera system



BOSCH

Invented for life



PRODUCT BENEFITS

- ▶ 360° surround view in tight situations
- ▶ Realistic display of the vehicle and its surroundings in different perspectives
- ▶ Driving lane indication serves as maneuvering and positioning support

- 1 Near-range camera
- 2 Electronic control unit



innovative functions

for more comfortable maneuvering

TASKS

The multi-camera system from Bosch for industrial trucks and off-road vehicles facilitates precise maneuvering in tight situations. Four cameras are combined into one system to create a 360° surround view of the vehicle's current surroundings.

TOP VIEW

An efficient algorithm is used to generate a natural image for the driver from the image data. The multi-camera system from Bosch uses four compact near-range cameras to calculate a top view in order to view the entire surroundings of the vehicle up to 8 × 8 m. The driver receives a realistic image of his/her own vehicle as the current surroundings are displayed in real time.

DRIVING LANE INDICATION

Based on steering-angle and driving direction signals, a driving lane is displayed. The color of the driving lane is adjustable in order to increase its visibility on different surfaces.

AUTOMATIC ZOOM

Optionally, the field of view is automatically adjusted based on the current driving speed. This helps to obtain a better overview of the surroundings while driving fast, and a more detailed view when maneuvering in tight situations.

COLOR ADJUSTMENT

The brightness and white balance of the images are automatically adjusted to produce a uniform output image.

AUTOMATIC CALIBRATION

If the alignment of the camera is disturbed by external influences and the camera does not shift more than $\pm 3^\circ$ in each axis, this shift is compensated by the system.

SPLIT SCREEN

In split-screen mode, the screen optionally displays two images at the same time, e.g. top view and panorama view.

PANORAMA VIEW

In this mode, the field of view of the front or rear camera is opened up to 180°.

FRONT, SIDE AND REAR VIEW

The images of the front, side and rear camera can be depicted in full or split screen. Switching between the different views is possible based on the vehicle signals. Alternatively, the images of each camera can be selected manually for display.

pioneering image processing

with 360° surround view

VIRTUAL PANNING

Dependent on the steering angle, the camera can pan digitally. This allows the driver to receive a display only of the area relevant to him/her.

COMPENSATION OF DEFECTIVE HARDWARE

If one or more cameras should fail, the field of view of the remaining cameras is enlarged in order to display the greatest possible area.

EASY DIAGNOSTICS AND CALIBRATION PROCEDURE

A simplified diagnostics and calibration procedure makes it possible to adapt the system to different vehicle variants.

TECHNICAL CHARACTERISTICS

Field of view (effective) and resolution

Field of view camera, horizontal	≥ 185°
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vertical	≥ 120°
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Field of view system, horizontal	360°
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Top view zoom level	8 × 8 m
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Max. resolution	WXGA (1,280 × 800 pixel) (adaptable, depending on customer's display)
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Interfaces

Video out	Automotive Ethernet (IEEE100BaseT1, H.264)
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Electricity

Supply voltage control unit	9–16V
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Supply voltage camera	8V via control unit
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Power consumption	≤ 14 W (control unit + 4 cameras)
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Environmental conditions

Control unit	IP5K
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Camera	IP6K7K
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Lens	IP6K9K
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Operating temperature	–40 °C to 80 °C
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Mech. load	Up to 500 m/s ² for control unit and camera (according to standards in the automotive industry)
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