SENSOR SOLUTIONS AND ASSISTANCE SYSTEMS

FOR INDUSTRIAL TRUCKS

SICK
Sensor Intelligence.

TASKS FOR INDUSTRIAL TRUCKS

As one of the worldwide leading developers and independent manufacturers of intelligent sensors and sensor systems, SICK offers the broadest and most innovative portfolio of solutions for the automation of industrial vehicles. Sensor solutions from SICK help make transport tasks safer, faster and more transparent. SICK uses its extensive expertise in sensor and systems technology to provide impressive solutions for all parts of the production and logistics chain.

➜ www.sick.com/Industrial_vehicles

Collision prevention

The ability to perceive a dynamic environment plays a particularly decisive role in the automation of industrial trucks. Operating on various physical principles, sensors have the ability to reliably detect even in critical ambient conditions.

Personnel safety

SICK safety systems protect people and prevent collisions with other vehicles and obstacles – with great flexibility, and according to the particular driving situation. Furthermore, they help reduce downtimes, and therefore operating costs as well.

Load handling and positioning

Sensors detect the presence of products or packaging elements, and measure distances, heights and the protrusion of goods on pallets and other transport items. They thereby eliminate errors in production and logistics processes.

Identification

Identification of codes and objects of all types is the basic requirement for manual, semi- and fully automated warehouses. SICK offers scalable solutions for all code types and for all ID technologies (laser, camera, RFID, hybrid) that are easy to adapt to the respective requirements.

COLLISION PREVENTION

If not used properly, industrial trucks can pose a high risk for accidents in industrial environments. Operating industrial trucks requires that the driver have a high degree of experience and concentration. Modern driver assistance systems for industrial trucks help to reduce accidents and follow-up costs and increase productivity for product handling. The SICK product portfolio offers sensor systems with 2D and 3D sensors for reliable collision avoidance for indoor and outdoor applications and a wide range of requirements.

2D rear area monitoring with active warning for manned forklift trucks

Areas behind the vehicle that are difficult or impossible to see from the driver's position are systematically monitored. The driver is warned with acoustic and visual alarms if the manned forklift truck comes dangerously close to moving or stationary objects. The areas to be monitored can be precisely defined with the use of freely parameterizable 2D LiDAR sensors. The Backup Assistance driver assistance system can be flexibly adapted to a wide range of vehicle models and can also be individually adjusted to the desired driving situations as needed.

- BAS Driver assistance systems

➜ www.sick.com/BAS

3D collision warnings for outdoor applications no matter what weather conditions

Large manned forklift trucks for outdoor use often have large blind spots. The use of these vehicles therefore poses increased risk of accidents in the surrounding areas. The rugged 3D stereoscopic sensor technology, combined with powerful algorithms for object classification, works reliably and actively warns the driver, even under harsh ambient conditions such as rain, snow and fog. Objects in the vehicle path are identified and clearly indicated on the display in the driver's cabin.

- Visionary-B CV Driver assistance systems

➜ www.sick.com/Visionary-B

High performance throughput ensured by 3D collision warning sensors for indoor applications

The Visionary-T DT 3D vision sensor detect a three-dimensional monitoring area. Detection zones of various shapes can be programmed in this way. When obstacles enter these detection zones, a signal is output via one of four switching outputs. Thanks to the precise scanning and display of objects, the driver can react quicker and more reliably during product handling.

- Visionary-T DT Driver assistance systems

➜ www.sick.com/Visionary-T

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PERSONNEL SAFETY FOR VERY NARROW AISLE (VNA) TRUCKS

The safety demand for very narrow-aisle warehouses

Very narrow aisle warehouses are storage systems which do not comply with the minimum distance of 0.5 meters between the shelving edges and industrial trucks. As this type of environment presents a risk of personal injury, it is important to comply with safety requirements in line with DIN 15185-2 by taking measures such as attaching a personnel protection system to both sides of the industrial trucks. Until now, the risk of collision meant that it was not possible to operate two or more trucks in the same aisle, which severely impacted on the efficiency and flexibility of operations involving industrial trucks.

Safety laser scanners for protecting people in narrow aisle warehouses

If the required minimum distance of 50 cm between the narrow aisle forklift and the racks cannot be upheld, a personnel protection system (PPS) is required in accordance with DIN EN 15185. This prevents the forklift from colliding with people. The ideal solution: The safety laser scanner microScan3 with a protective field range of up to 9 m.

- microScan3 Safety laser scanner

➜ www.sick.com/microScan3

Optimized throughput by means of a microScan3 safety laser scanner installed on the VNA truck

The simultaneous use of several vehicles in one narrow aisle is only permissible with special safety devices. SICK has a type-tested PLd solution for this: A safety laser scanner is attached to the front and rear side of the narrow aisle forklift. The safety laser scanner microScan3 Pro reliably detects vehicles in the same and opposite direction of travel - and up to 19 m. This enables maximum productivity and system reliability.

- microScan3 Safety laser scanner

➜ www.sick.com/microScan3

Activation of person recognition with photoelectric retro-reflective sensors

Activation of the personnel protection system (PPS) in the narrow aisle must be automated and reliable when the narrow aisle forklift enters the aisle. Redundant W26 compact photoelectric sensors on the forklift can reliably differentiate between the entrance and exit of the narrow aisle. Detection of persons functions as a driver assistance system outside the aisle.

- W26 Compact photoelectric sensor

➜ www.sick.com/W26

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LOAD HANDLING AND POSITIONING

Quickly and precisely leveling the fork horizontally – for increasing productivity and load stability

Regardless of the position of a manned forklift truck, inclination sensors can precisely monitor the tilt angle of a lifting fork. The acceleration-compensated TMS88 Dynamic inclination sensor supports the driver in quickly aligning the fork. The sensor measures the tilt of the fork during the loading and unloading process and during driving, therefore ensuring increased stability of the vehicle at all times.

- TMS/TMM61 Inclination sensor
- TMS/TMM88 Dynamic inclination sensors

→ www.sick.com/TMS_TMM61

→ www.sick.com/TMS_TMM88

Faster load carrying with a driver assistance system equipped with a 2D LiDAR sensor

The small 2D LiDAR sensors of the TiM series can be placed well protected between the fork arms. The contour of the pallet is scanned with the respective switching fields. The switching outputs control signal devices such as display lights or buzzers, actively supporting the driver during load lifting.

- TiM1xx 2D LiDAR sensor
- TiM3xx 2D LiDAR sensor

→ www.sick.com/TiM1xx

→ www.sick.com/TiM3xx

Retrofittable speed measurement on narrow aisle forklifts

When equipping narrow aisle forklifts with safety and driver assistance systems, it is often necessary to provide additional signals for speed and direction of travel. Regardless of the manufacturer, speed measurement on narrow aisle forklifts is possible with the DFV60 measuring wheel encoder, which can be attached to nearly any vehicle.

- DFV60 Measuring wheel encoders

→ www.sick.com/DFV60

Measuring forklift heights for productive handling with process reliability

Manned forklift truck drivers have to know how the lifting fork of their vehicle is positioned for quick and safe storage and removal of goods, particularly at different heights. This is especially important during load lifting, driving and when transferring the load. IME or IMB inductive proximity sensors detect the forklift positions and show them to the driver on the display.

- IMB/IME Inductive proximity sensor

→ www.sick.com/IMB

LOAD HANDLING AND POSITIONING

Measuring vertical and horizontal fork movements of a forklift

The EcoLine wire draw encoder, which can be compactly integrated into the lifting gear, allows accurate, quick, and reliable measurement of the fork height. The sensor solution makes it possible to monitor the lateral fork movements for automated pre-setting to various pallet sizes.

- EcoLine Wire draw encoder
- HighLine Wire draw encoder

➜ www.sick.com/EcoLine

➜ www.sick.com/HighLine

Compact and wear-free – optical distance sensors for measuring forklift height

The Dx35/50 optical distance sensors enable continuous determination of the position of fork of the forklift without causing wear. Connection to different display devices is possible with an analog output and IO-Link interface. The patented HDDM time-of-flight technology ensures high availability in harsh environments.

- Dx35 Mid range distance sensor
- Dx50 Mid range distance sensor

➜ www.sick.com/Dx35

➜ www.sick.com/Dx50

Load identification on pallets for industrial trucks with RFID

RFID tags on pallets make it possible to identify the load. The tags contain all data necessary for further processing. The RFU63x RFID sensor reads and writes transponder data. It is connected to the TDC-E gateway system, which pre-processes the data and transmits it wirelessly to the higher-level MES or ERP system. The data for tracing and other logistics processes is evaluated there.

- RFU63x RFID write/read device
- TDC Gateway systems

➜ www.sick.com/RFU63x

➜ www.sick.com/TDC

Driver assistance in narrow aisle warehouses by means of RFID positioning

Driver assistance systems support manned forklift truck drivers in narrow aisle warehouses so that they can approach the next storage space quickly and without errors. Rugged and space-saving, RFID tags are embedded in the floor of the narrow aisle. On the forklift, the RFH630 RFID read/write device reads the tags and the vehicle controls stops automatically at the target column of the shelving unit.

- RFH6xx RFID write/read device

➜ www.sick.com/RFH6xx

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IDENTIFICATION

Automatic bar code identification without driver intervention

With CLV6xx high-performance bar code scanners, goods are identified automatically and without the driver needing to climb out of the vehicle. The large working range and quick auto focus of the reading distances ensure automated scanning even if the code positions vary greatly.

- CLV65x Fixed mount bar code scanner
- CLV69x Fixed mount bar code scanner

→ www.sick.com/CLV65x

→ www.sick.com/CLV69x

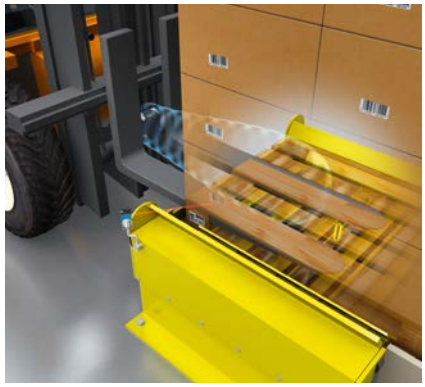
Automatic identification of bar codes and 2D codes

To ensure complete traceability of goods in logistics warehouses and confirmation of the correct material for transport by industrial trucks, the Lector63x and 65x image-based code readers identify the bar codes and 2D codes on the goods. The sensors read the codes reliably, even on shiny objects and regardless of the surface quality.

- Lector63x Image-based code reader
- Lector65x Image-based code reader

→ www.sick.com/Lector63x

→ www.sick.com/Lector65x



Complete tracking of the material flow by an integrated RFID sensor into the manned forklift truck

RFU6xx RFID read/write devices can detect tags at ranges of up to o,5/ 2 m. This means that pallets or trolleys can be identified during the manned forklift truck's approach. Once read, the tag data is verified via the warehouse management system, supporting consistent traceability of goods flows (track and trace).

- RFU61x RFID write/read device
- RFU62x RFID write/read device

→ www.sick.com/RFU61x

→ www.sick.com/RFU62x

Bar code identification on goods in varying load carriers

With varying load carriers with bar codes distributed on all sides, it can be difficult to read these automatically. With the rugged HW198x hand-held scanner, the forklift driver can identify the goods quickly and ergonomically. The handheld scanner supports all common corded and cordless interfaces for connecting to the forklift terminal.

- HW198x Mobile hand-held scanner

→ www.sick.com/HW198x

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 10,000 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. 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.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the 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 SICK a reliable supplier and development partner.

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

That is "Sensor Intelligence."

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com

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