



MOBILE AUTOMATION

SENSOR SOLUTIONS FOR SPECIAL AND MUNICIPAL VEHICLES

SICK
Sensor Intelligence.

TASKS FOR SPECIAL AND MUNICIPAL VEHICLES

Providing innovative and intelligent sensor solutions, SICK has been shaping the logistics, factory and process automation sector as one of the leading global sensor manufacturers for decades. With industry knowledge and a wide sensor-technology portfolio, SICK is the ideal partner for providing sensor solutions for mobile machines. Integrating sensors and sensor systems in special and municipal vehicles create intelligent solutions suited for daily use that meet customer expectations both in terms of an increased yield and lower process costs.



More information about SICK sensor-technology portfolio
 → www.sick.com/mobile_automation



Solutions – designed for machine manufacturers

SICK has a comprehensive, innovative technology portfolio. Based on these technologies, SICK develops tailor-made sensor solutions for special and municipal vehicles manufacturers. The portfolio ranges from standard sensors and sensors with integrated application software through to complex sensor-system solutions. Please contact us. We would be happy to provide you with more information.



Positioning and detecting

Sensors such as encoders, inclination, proximity and ultrasonic sensors, as well as pressure and level sensors manufactured by SICK, are the basis of numerous positioning and detection tasks in special and municipal vehicles.



Collision awareness

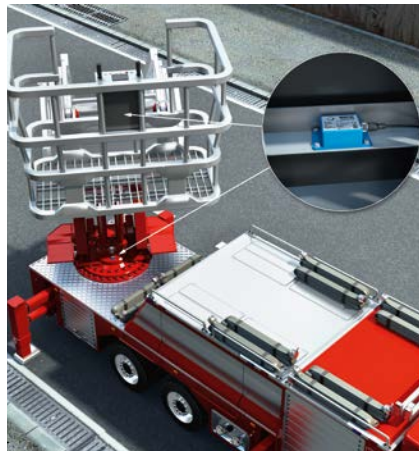
Driver assistance systems based on SICK LiDAR sensors or 3D vision sensors reliably detect blind zones around mobile machines and warn the operator of potential sources of danger or accidents in good time. This means the driver is able to identify and prevent possible collisions early on. As a result, damage to the machine and the surrounding area is rare. This reduces the machine downtimes and repair costs.



Contour guidance

Driver assistance systems for contour guidance based on SICK LiDAR sensors increase the efficiency of special and municipal vehicles, while simultaneously relieving the strain on the operator. Thanks to intelligent sensors with integrated application software, the recorded raw data and the vehicle data are directly evaluated by the sensor. Application-relevant results are therefore available without resource-intensive processing in the driver assistance systems of the machinery manufacturer.

SMART MOTION CONTROL SENSORS FOR POSITION, SPEED AND INCLINATION



Absolute encoder AHS/AHM36 CANopen

The AHS/AHM36 CANopen absolute encoders set new standards in flexibility and diagnostics. With their rotatable plug or cable outlets as well as the various mounting options, these encoders are suitable for nearly any application. Encoder parameters such as resolution or counting direction and the output of diagnostics data can be adapted in the CANopen network or via the PGT-12-Pro programming tool. Thanks to the large operating temperature range from -40 °C to +85 °C and the protection class up to IP 67, this encoder family can be used in harsh ambient conditions.



Inclination sensor TMM/TMS

The TMS one-dimensional inclination sensors and the TMM two-dimensional inclination sensors are setting new standards with respect to size, flexibility, and performance. In their small, rugged plastic housing, the sensors offer excellent resolution and accuracy – over the entire measuring range and in an extremely wide range of ambient conditions. The CANopen interface enables a whole host of device parameters to be adjusted, allowing the sensors to be perfectly tailored to the application. In addition, the sensors are also available with analog interfaces and aluminum housing.



Programming tool PGT-12-Pro

The PGT-12-Pro is a compact programming device for configuring absolute encoders with CANopen interfaces as well as inclination sensors with CANopen and analog interfaces from SICK. Because it has an integrated voltage supply, it is able to work in a fully self-contained manner and is thus particularly suitable for mobile use. Using the PGT-12-Pro, CANopen-specific parameters such as node ID and baud rate as well as sensor-specific parameters such as resolution, preset values (AHS/AHM36 CANopen), zero point and digital filters (TMS/TMM) can be set quickly and easily.

AIRCRAFT TRACTOR



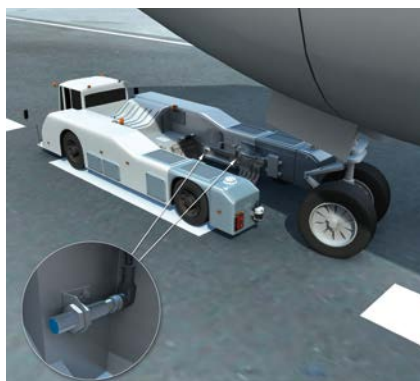
Driver assistance on aircraft tractors

The APS (Aircraft Protection System) driver assistance system provides reliable warnings against collisions with other ground vehicles and the airport infrastructure. It also provides the tractor driver with assistance during push-back, maintenance and maneuver towing. The display shows all the obstacles that are in the vicinity of the aircraft. The driver receives an acoustic and optical warning when there are obstacles in the aircraft's towing corridor.



→ www.sick.com/APS

- APS driver assistance system



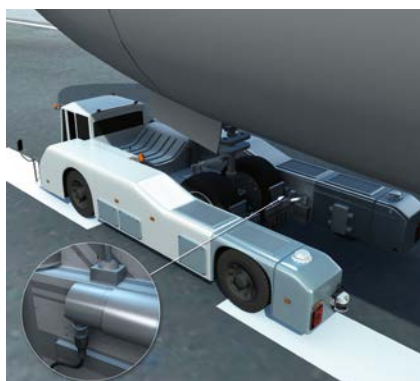
Detection tasks in aircraft tractors

The particularly rugged IMB inductive proximity sensors detect joint positions and record their end positions in aircraft tractors. Large, high-precision sensing ranges enable reliable sequence control, e.g. in the nose wheel receptacle. Thanks to their stable and durable construction, the proximity sensors help to reduce machine downtime, e.g. during the time-critical push-back process. Even the installation at the plant and on-site is quick and easy thanks to visual adjustment support and self-locking nuts.



→ www.sick.com/IMB

- IMB inductive proximity sensor



Position detection in aircraft tractors

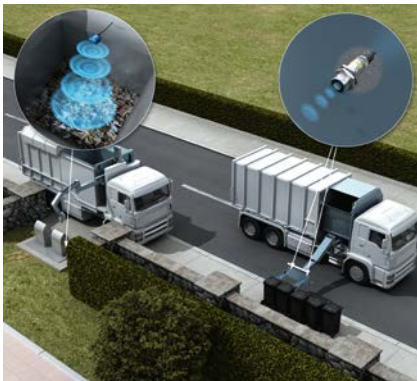
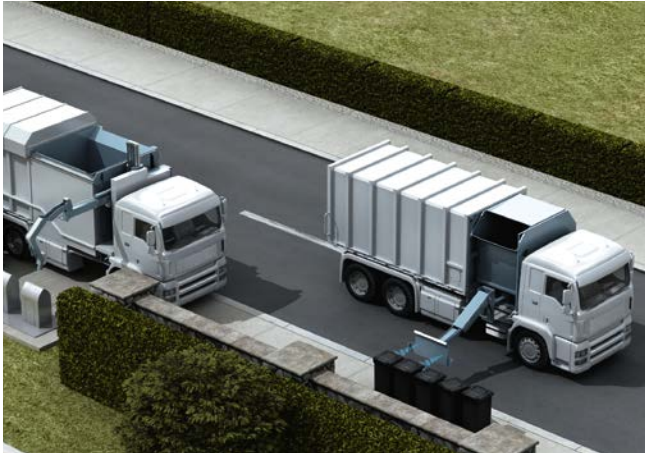
It is important to check the exact position of the nose wheel receptacle flap in the nose wheel receptacle. The singleturn version of the AHS/AHM36 absolute encoder is used for this purpose. It can also be used in harsh ambient conditions thanks to its rugged and reliable, fully-magnetic sensor technology. Thanks to its small size, the encoder can also be used when space is tight.



→ www.sick.com/AHS_AHM36_CANopen

- AHS/AHM36 CANopen absolute encoder

GARBAGE TRUCK AND HEAVY TRUCK



Position detection of waste containers and level measurement in underfloor containers

Thanks to intelligent measured value filters and temperature compensation, the UM18 ultrasonic sensor enables reliable position detection and therefore precise positioning of the gripping arm when emptying containers. The contamination-resistant UC30 mounted in the underfloor container detects the critical filling level of the container in order to trigger an emptying request.

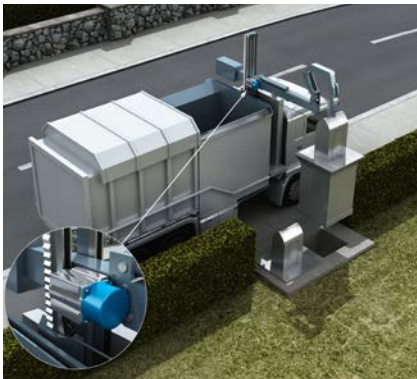
- UM18 ultrasonic sensor
- UC30 ultrasonic sensor



→ www.sick.com/UM18



→ www.sick.com/UC30



Positioning of the gripper arm on garbage trucks

The exact position of the gripper arm must be recorded to enable automatic emptying of waste containers. Therefore the compact AHS/AHM36 absolute encoder determines the rotational movement on the gripper arm. Thanks to the high repeatability, the HighLine wire draw encoder reliably measures the extension path of the gripper arm. The gripper arm can now be positioned exactly by means of the recorded sensor values.

- HighLine wire draw encoder
- AHS/AHM36 CANopen absolute encoder



→ www.sick.com/Highline



→ www.sick.com/AHS_AHM36_CANopen



Steering angle detection on heavy trucks

For simpler and more reliable maneuvering of heavy trucks carrying large payloads, many of these vehicles have sensors for controlling the steering angles of each individual drive axle. The AHS/AHM36 absolute encoder is ideally suited for this task. With its IP 66/IP 67 enclosure ratings, as well as an operating temperature range of -40 °C to +85 °C, it reliably detects the absolute position of the respective wheels, even in harsh environments. The positioning data obtained in this way enables heavy loads to be positioned precisely.

- AHS/AHM36 CANopen absolute encoder



→ www.sick.com/AHS_AHM36_CANopen

FIRE TRUCK



Aerial ladder positioning on aerial rescue trucks

Sensor solutions for position recording are used to realize reproducible motion sequences of the aerial ladder. Wire draw encoders from the HighLine product family detect the length of the extended ladder. Thanks to robust mechanics and very precise sensor technology, high repeatability is achieved. The wire draw encoders from the EcoLine product family are perfect for the support positioning thanks to their narrow shape.

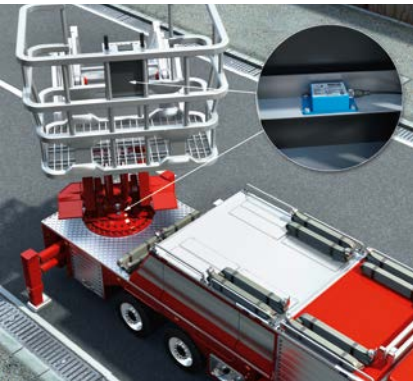
- HighLine wire draw encoder
- EcoLine wire draw encoder



→ www.sick.com/HighLine



→ www.sick.com/EcoLine



Determining the inclination of the basket

In order to be able to transport people steadily and horizontally, the two-dimensional TMM61 inclination sensor detects the inclination of the basket and forwards this regulation information to the superior control unit. Thanks to the compensating cross sensitivity and the configurable vibration suppression, the TMM61 enables precise and reliable positioning.

- TMS/TMM61 inclination sensor



→ www.sick.com/TMS_TMM61



Encoder for angle detection at the aerial ladder

The angle and the position of the aerial ladder relative to the lower carriage must be known in order to realize repeating motion sequences. The AHS/AHM36 absolute encoder is the perfect sensor solution thanks to its compact and rugged design and the high repeatability.

- AHS/AHM36 CANopen absolute encoder



→ www.sick.com/AHS_AHM36_CANopen

AIRPORT FIRE TRUCK



Positioning the water/foam monitor

The AHS/AHM36 absolute encoders record the joint position in order to realize automatic swivel movements of the foam monitor, such as the approach into attack position or automatic oscillation movements. Thanks to the high resolution, the design intended for harsh ambient conditions and the compact construction, these encoders are particularly well-suited for such tasks.

- AHS/AHM36 CANopen absolute encoder



→ www.sick.com/AHS_AHM36_CANopen



Rear collision awareness on the airport fire truck

The intelligent driver assistance system with the Visionary-B vision sensor helps reduce the risk of collisions during turning maneuvers or reversing. The system displays a real-time image with optical and acoustic warning signals. Even in bright sunlight or heavy rain, it helps the operator to detect objects in blind zones around the vehicle. This allows the operator to focus on the main tasks.

- Visionary-B 3D vision sensor



→ www.sick.com/Visionary-B



Level monitoring in the water tank

It is necessary to know the precise level of the extinguishing water tank at all times to enable exact operational planning. This is possible with the help of the LFP Cubic level sensor with cable probe. Thanks to the flexible mounting option and low sensitivity to fluctuations, it is well suited for this task.

- LFP Cubic level sensor



→ www.sick.com/LFP_Cubic

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our 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.

We have extensive experience in various 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 round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, 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