Overhead Crane Position Monitoring

Industries: Crane
Application type: Positioning

Description

In overhead crane automation, Laser Distance Sensors from Dimetix provide highly precise, real-time measurements for both automatic positioning and defining blocked areas. Automatic positioning involves the operator selecting a target location via radio control, after which the crane moves to the precise X and Y coordinates using data provided by PROFINET-connected lasers. These sensors offer sub-millimeter accuracy, ensuring exact crane movements, even over long distances. Their long-range capabilities up to 500 meters allow for highly efficient positioning in large industrial environments.

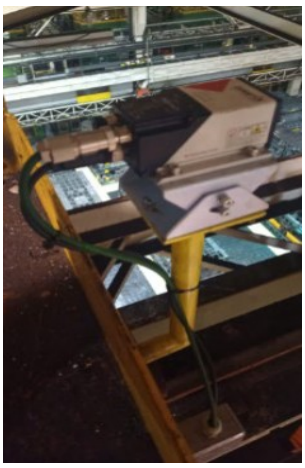

Fig 1: Dimetix laser distance senor installed on a crane system

For blocked areas, Dimetix Lasers Sensors enable the crane system to pre-program forbidden zones where the crane's hook must not pass. Traditional crane operations rely heavily on operator attention, which can sometimes result in collisions with fixed equipment such as rooms, presses, or machines. Using Laser Distance Sensors, the exact coordinates of these areas can be input into the crane system, preventing the crane from entering restricted zones. This eliminates the risk of human error, significantly improving both safety and operational efficiency.

Dimetix Laser Sensors are designed for harsh industrial environments, offering high durability and reliability. They undergo rigorous testing to ensure precision and safety, making them ideal for applications where high accuracy and fail-safe operation are critical. The lasers are resistant to vibration and temperature fluctuations, making them well-suited for integration into automated systems in the overhead crane industry.

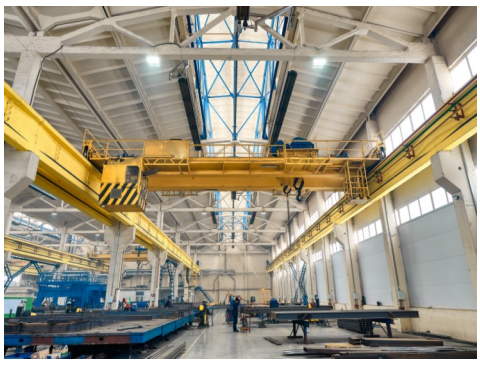

Fig 2: Crane set up

Customer Advantages:

- **Precision:** ±1 mm accuracy ensures exact crane positioning, minimizing errors.
- **Efficiency:** Long-range capabilities up to 500 meters allow for the automation of large-scale crane movements, reducing manual intervention and speeding up operations.
- **Cost Reduction:** Decreased risk of collisions with fixed machinery or rooms leads to lower maintenance costs and prevents downtime due to accidents.
- **Reliability:** Rugged design ensures long-lasting performance, even in harsh industrial environments.
- **Automation:** PROFINET connectivity allows seamless integration with industrial automation systems, enhancing productivity.
- **Reduced Human Error:** Laser-guided systems eliminate reliance on operator attention for critical safety zones, improving operational precision.

- **Improved Workflow:** Consistent, repeatable positioning enhances workflow efficiency, especially in complex or multi-plant environments.

These advantages make Dimetix Laser Distance Sensors a valuable asset in overhead crane automation, enhancing both safety and operational performance for industrial users.

Dimetix Sensors – the solution for applications with high precision requirements

Thanks to the clearly arranged product portfolio the evaluation of a suitable Dimetix Laser Distance Sensor is simple and uncomplicated.

Dimetix Sensors offer numerous features, which are integrated in each and every device as standard, including, among others, various interfaces like SSI, RS-422/485, RS-232 and 2 digital outputs.
Optionally, the Industrial Ethernet interfaces PROFINET, EtherNET/IP and EtherCAT are also available. Furthermore, all devices are IP65-protected and impress with a weight of less than 500 grams!

Particularly noteworthy, however, is the accurate measurement of 1 millimeter over distances of up to 500 meters, even under the most extreme conditions. This is possible with the sensors of the types DPE, DEN and DEH.

No less interesting are sensors of types DAE, DAN and DBN. Preferably, they can be used for projects which do not require a range over 500 meters or are cost-sensitive.

	DPE-10-500	**DPE-30-500**	**DEN-10-500**	**DEH-30-500**
PARTNUMBER	500630	500636	500637	500638
SPECIFICATION				
Typical accuracy $\cong \pm 2\sigma$	± 1 mm	± 3 mm	± 1 mm	± 3 mm
Mensurierung range on natural surfaces	0.05…~100 m	0.05…~100 m	0.05…~100 m	0.05…~100 m
Measuring range on reflective foil	~0.5…500 m	~0.5…500 m	~0.5…500 m	~0.5…500 m
Max. measuring rate	250 Hz	250 Hz	100 Hz	100 Hz
Operating temperature	-40…+60°C	-40…+60°C	-10…+50°C	-10… +60°C

	DAE-10-050	**DAN-10-150**	**DAN-30-150**	**DBN-50-050**
PARTNUMBER	500633	500632	500634	500635
SPECIFICATION				
Typical accuracy $\cong \pm 2\sigma$	± 1 mm	± 1 mm	± 3 mm	± 5 mm
Mensurierung range on natural surfaces	0.05…~50 m	0.05…~100 m	0.05…~100 m	0.05…~50m
Measuring range on reflective foil	~40…50 m	~40…150 m	~40…150 m	
Max. measuring rate	100 Hz	100 Hz	100 Hz	10 Hz
Operating temperature	-40…+60°C	-10…+50°C	-10…+50°C	-10…+50°C