

Precise Auto-Guided Transport System Alignment when Picking Up Goods Carriers

PGV System for Object Identification and Position Detection

At a Glance

- Large reading window and its own illumination unit for reliable detection of Data Matrix tags
- Precise position detection in real time enables accurate alignment of the auto-guided transport system underneath the goods carrier
- Compact housing for use in tight spaces
- Easy installation and commissioning with plug-and-play configuration
- Open protocol for flexible integration into any control system



The Application

Auto-guided transport systems are becoming increasingly common in warehouse logistics processes. These devices are often referred to as bots and are used to automatically transport goods carriers such as rack systems and trolleys. To begin a transport task, they drive into a recess under the goods carrier, lift it up, and set off for the specified destination. The automated process is based, among other things, on reliably identifying the goods carrier and determining the precise, relative orientation of the bot to the goods carrier. Since only flat bots can fit underneath the racks, the technology required for navigation must be compact.

The Goal

The goods carriers must be identified with the highest possible level of reliability. When driving underneath the rack, the bot has to position itself precisely under the goods carrier. Precise alignment is required to ensure that the bot is able to pick up the goods carrier correctly and transport it safely without the risk of it tipping over. Picking up the goods carrier unevenly could also cause problems upon delivery; for example, the goods carrier could bump into something or fail to navigate into the gap provided.

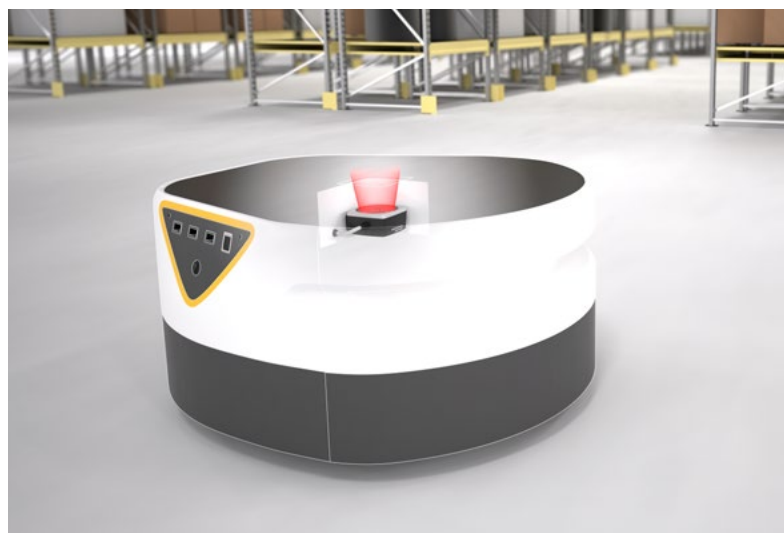
The Solution

The Position Guided Vision (PGV) positioning system is guided by Data Matrix tags. They are detected in a noncontact manner by the PGV read head, which consists of a camera system with a built-in illumination unit and large reading window. A tag with multiple codes is attached to the bottom of the goods carrier. The read head on the top of the bot uses these to identify the goods

carrier. At the same time, the orientation of the read head to the tag is detected, thereby determining the exact position of the target object. Using the data from the PGV, the control system can precisely position the bot as soon as it comes into contact with the goods carrier to ensure that the carrier is picked up correctly.

The Benefits

Just one device can perform two tasks at the same time. The PGV system ensures reliable identification of the goods carrier and high-resolution position detection. The incident light process with integrated illumination unit ensures that tags are detected even in poor lighting conditions. The read head is extremely compact and can even be fitted to very small bots. Because it is mechanically rugged, and the noncontact functionality allows wear-free use, it typically has a long service life. Its open protocol means that it can be flexibly integrated into any control system and commissioning is easy with plug-and-play.



Technical Features PGV100RS-F213*

- Cycle time: 10 ms
- Height: 35 mm
- X and Y accuracy: 0.4 mm
- Angle accuracy: 1°
- Operating distance: 100 mm
- Large reading range of 120 × 80 mm

