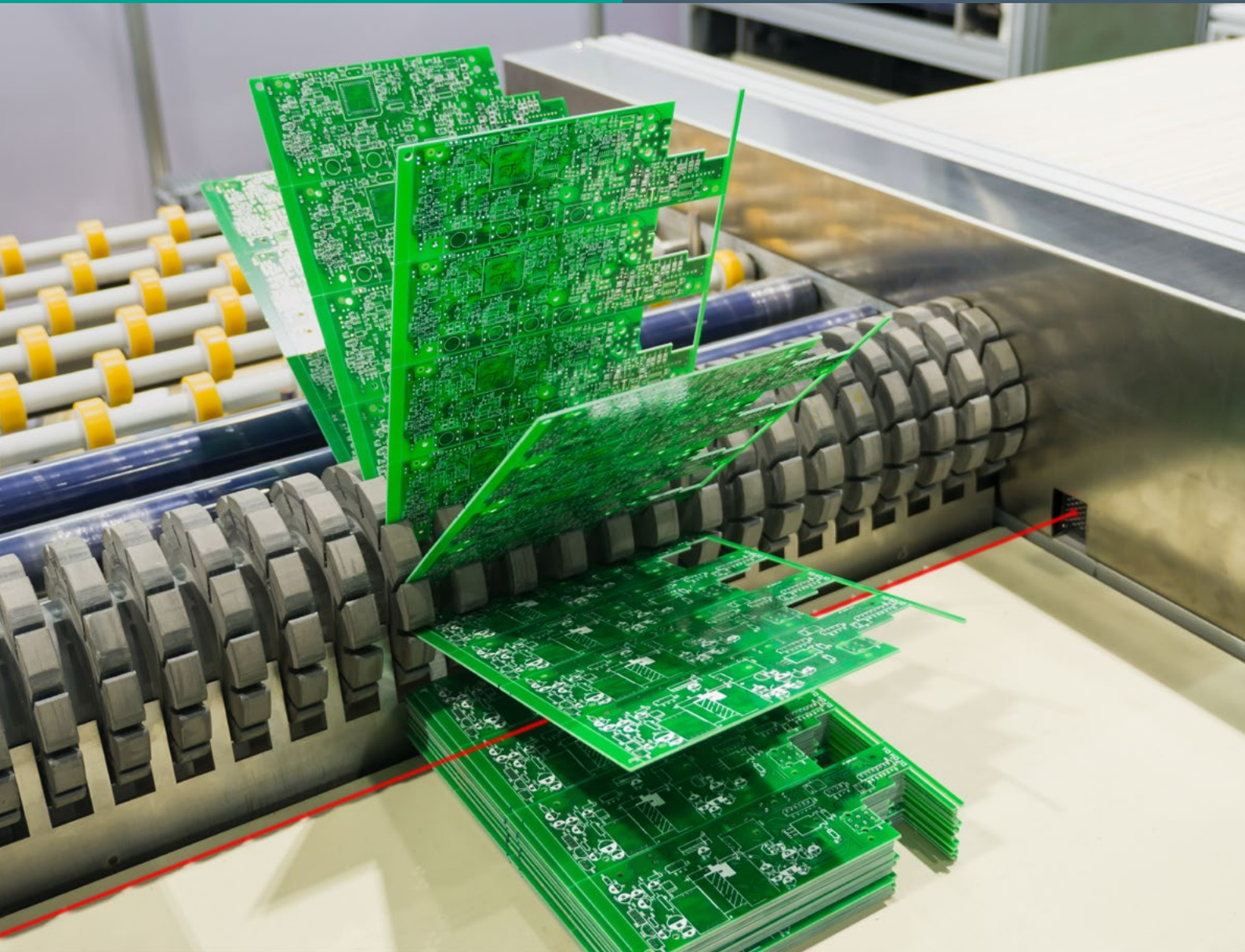


Reliable PCB Stack Detection with Thru-beam Sensors

ML100 with Built-In Slit Aperture
to Shape the Light

At a Glance

- Accurate position and height detection of PCBs to be picked up
- Built-in aperture with a size of 1.5 mm × 7.4 mm limits the field of view to only 1.5 mm in one direction
- Relatively high sensing range of up to 4 m
- Vertical or horizontal slit apertures available: for more flexibility in sensor mounting



The Application

If CPUs are the brains in the electronics industry, then PCB industry is the backbone. It supports all the components and connects them all together. In the vast PCB industry, all kinds of machines move and process PCBs. Examples of such machines are conveyors, buffers, marking machines, loaders, unloaders, and traffic controllers. Loaders and unloaders are responsible for loading PCBs with a vacuum suction from a stack onto a machine or vice versa.

The Goal

The vacuum suction is located above the stack of PCBs. The position or height of this stack needs to be detected accurately in order for the top PCB to be picked up correctly and safely. Otherwise, there is a risk of damage to the vacuum suction. As there is no space to mount the sensor from the top, the sensor needs to be installed at the side and looking across at the top of the stack.

The Solution

The thru-beam sensor with built-in slit aperture is used as it is the most reliable method of detecting the position of the stacking height. The M100-6090 emitter and MV100-6090 receiver have a built-in aperture of 1.5 mm × 7.4 mm, limiting the field of view to only 1.5 mm in one direction. With this, the detection is confined within 1.5 mm and the accuracy of the stop position is significantly increased.

The ML100 thru-beam sensor has the slit aperture already installed within the sensor. Therefore, there is no need for an additional clipping on of an aperture. Which is impractical and unsightly, however, necessary with conventional sensors.

The Advantages

This is the best solution because it is most cost-effective, reliable and has an appealing design. The solution with a built-in aperture is elegant as it can dispense the unsightly clip-on aperture. A clip-on aperture would make the routine cleaning of sensors more difficult.

Even with the aperture slits, the sensor achieves a relatively high sensing range of up to 4 m; this gives it more than sufficient signal reserves for a very reliable detection. The availability of the apertures in two orientations offers the added flexibility to mount the sensor in both orientations.



Vertical Apertures



Horizontal Apertures

Technical Features M100-6090 Emitter and MV100-6090 Receiver

- Long sensing range of up to 4 m (2.8 m with FR2 or signal with two time reserves)
- Built-in slit aperture without the need of external apertures
- Apertures in two orientations for versatility in installation
- Effects from environment are reduced, such as cross-talk and ambient light sources
- Detection of smaller objects and accurate positions of objects
- Highly visible LEDs for Power ON and switching state

