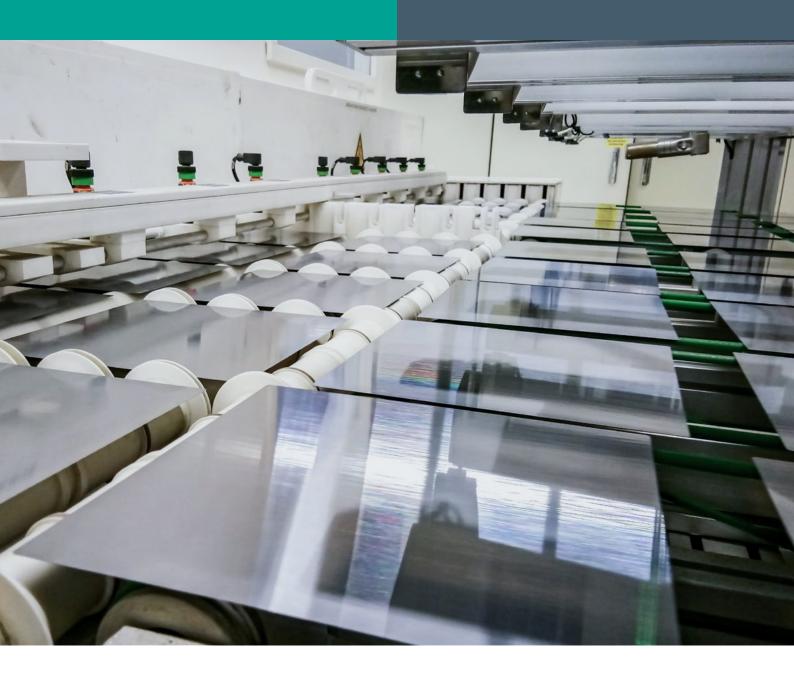# Diffuse Mode Sensors Detect Blue Solar Wafers

Reliable Recognition of Solar
Wafers with ML100
and BlueBeam Technology

At a Glance

- Reliable detection of highly light-absorbing solar wafers

- Color, texture, and reflection independent recognition

- Large detection range for flexible installation

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The Application

The basic function of solar cells is to absorb as much light as possible to convert it into electrical energy. Solar wafers form the physical basis of the photovoltaic cell. They are made of blue silicon and have a special antireflection coating to ensure high absorption capacity and thus high cell efficiency. During the production of the photovoltaic cells, the solar wafers are sorted and automatically loaded into trays for further processing. For this purpose, the solar wafers must be picked up using (vacuum) suction pads. In order to ensure that the gripper picks up the solar wafers correctly and thus ensures a smooth process, the presence of the solar wafer must be reliably detected.

The Goal

The reliable detection of solar wafers is one of the most demanding tasks for a photoelectric sensor. This is because the anti-reflection coating means that the reflectivity of a blue solar cell can only be as low as 0.3%. The sensor must therefore be able to reliably detect solar wafers regardless of color, texture and reflectivity.

In addition, the transport of larger solar wafers leads to a fluctuating movement at their edges. This requires a particularly close installation of the sensor on the object to be detected. As the transport speed increases, so does the demand on the detection speed of the sensor.

The Solution

The BlueBeam variant from the proven ML100 series is capable of detecting all types of solar wafers. It uses a visible blue LED with a powerful but focused light spot with a wavelength of 470 nm. Conventional red LEDs are based on wavelengths of 650 nm. The ML100 with BlueBeam therefore offers more precision in detecting solar wafers with particularly low reflectivity than typical red LED sensors. The diffuse mode sensor with its low response time of 1 ms meets the challenge of increasing transport speeds.

The Benefits

Thanks to its large detection range, the sensor can even be installed at a greater distance from the object. This is because the sensor detects the solar wafer even if there is considerable fluctuation at its edges. The ML100 series with BlueBeam not only reliably detects blue solar wafers, but can also be used for the recognition of difficult-to-detect PCBs. The highly visible blue LED light source simplifies installation and setup. Since high-frequency scanning is less susceptible to interference, the sensor maintains a stable signal even when exposed to mechanical forces such as shock and vibration.

Technical Features ML100-8-H-250-BU

- BlueBeam with modulated light of wavelength of 470 nm
- Very bright, highly visible blue light spot
- Clearly arranged LEDs for Power ON and switching state
- Miniature design with full metal thread mounting

For more information, visit: **pepperl-fuchs.com/px-ml100blue**