

Barcode scanners



! The challenge

Automated logistics depends on reliable barcode and OCR reading to sort, track, and route products at full conveyor speed. In fixed or mobile vision systems, package position and height can change continuously. Key limitations are:

- High speed – motion leaves little time for refocusing.
- Variable distance – fixed-focus optics lose sharpness.
- Large scan area – wider FOV reduces available resolution.
- Mechanical focus/scan motion – added size, wear, vibration, and maintenance.

For example, a conveyor reader may need to decode labels on packages of different heights without slowing the line or moving the camera.



Optotune's solution

Optotune liquid lenses and fast steering mirrors enable dynamic barcode imaging without bulky mechanical focus or scan stages. Liquid lenses refocus within milliseconds and cover working distances from 50 mm to infinity; Optotune lenses are designed for high repeatability and lifetimes above 1 billion cycles.

Fast steering mirrors expand the effective field of view with 2D beam deflection. The result is reliable, high-throughput reading across changing distances and larger scan areas.

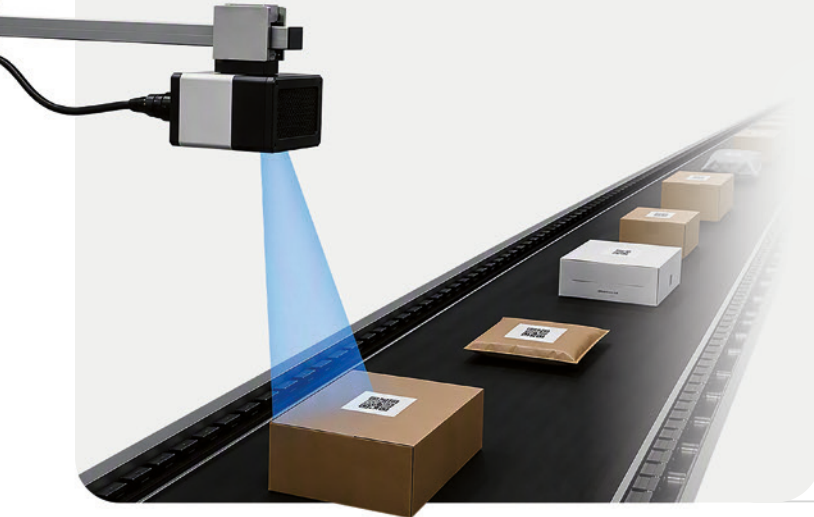
Advantages

- ✦ **Millisecond-fast autofocus**
- ✦ **Working-distance range:** from 50 mm to infinity
- ✦ **Liquid-lens lifetime above 1 billion cycles**
- ✦ **2D field-of-view expansion** without moving the camera

High-speed conveyor scanning

50 mm to infinity WD

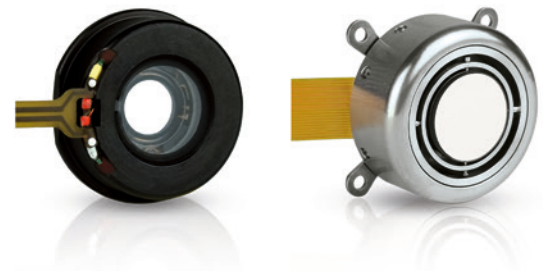
Liquid-lens autofocus keeps labels sharp as package height and distance change while the conveyor remains at full speed.



Wide-area fixed scanning

2D steering mirror

The MR-15-30 expands the effective FOV so one camera with a small FOV can address multiple barcode locations without moving the camera.



Mobile/robotic inventory scanning

Compact ELM-F optics

Fast refocusing across shelves and package distances supports supermarket and logistics robots with minimal size and weight.



Customer success story

A barcode reader manufacturer succeeded in improving the autofocus speed thanks to liquid lenses, bringing the product to a level that covers challenging use cases like fork-lift and direct part marking. By using fast steering mirrors, another customer succeeded in enlarging the field of view and reducing the number of needed scanner by 66%.



Fast focus settling

with push-button or autofocus operation



Long working distance

for flexible conveyor layouts



Large field of view

for compact systems with less hardware

Scan for more info:

