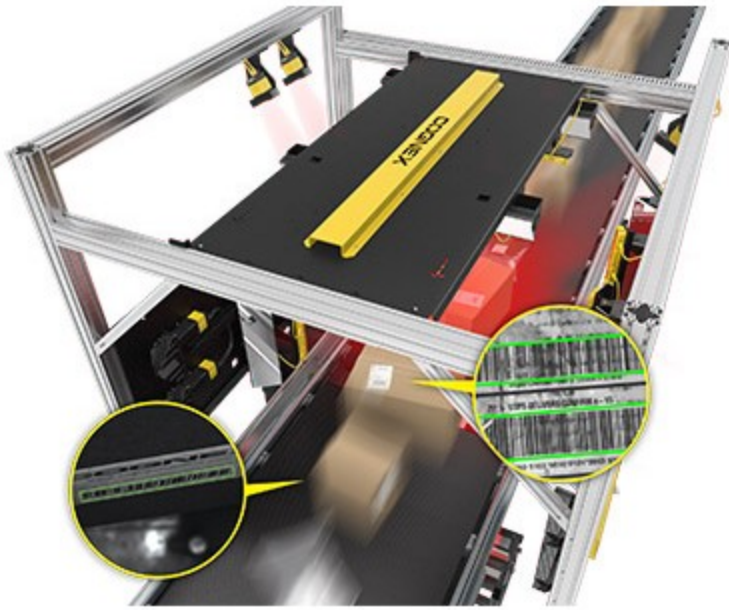


MAKING THE CASE FOR LOGISTICS AND IMAGE BASED BARCODE READING



Worldwide retail e-commerce grew 27.6% in 2020 and projects to continue double-digit growth over the next several years.¹ Given this surge in growth, retailers are trying to compete in an environment being transformed by a surge in e-commerce, and consumers' demand for immediate gratification are adopting "buy online, pick up in-store" (BOPIS) and "buy online, return in-store" (BORIS) models to maintain their physical store presence while also effectively using these locations as hubs for fulfillment.

Image-based barcode readers are the key to effective logistics and inventory management. Retailers seeking to compete know they need to incorporate barcodes into every part of their operation, from tracking incoming products, to accurately picking and fulfilling an order, to ensuring packages are leaving the building on the right truck. While laser scanners have been the most common barcode reading technology for a long time, they are inadequate to many of the demands of the new environment of mixed online and brick-and-mortar operations. Switching to image-based barcode readers can dramatically improve distribution center operations.



The importance of read rates

It doesn't take much of a problem in read rates to put a serious drag on throughput and efficiency. Poorly printed, damaged, or misplaced barcode labels that can't be read require manual rework to relabel or reroute rejected packages. Even relatively small improvements in read rates can have significant effects on throughput and labor costs associated with re-working rejected packages. For example, a high-volume distribution center can save up to \$270,000 per year in labor costs with just a 0.9% increase in read rates.

Table 1. Annual Labor Savings (\$USD) using Cognex Image-Based Barcode Reading Systems?

		New Read Rate				
		97%	98%	99%	99.5%	99.9%
Current Read Rate	97%		\$300,825	\$601,761	\$752,194	\$872,550
	98%			\$300,956	\$451,369	\$571,725
	99%				\$150,413	\$270,769
	99.5%					\$120,356
	99.9%					

Laser scanners capture only a single scan line at a time, which limits their ability to read barcodes, particularly when barcodes are poorly printed, damaged, or misaligned.

Diagnosing no-read problems can be surprisingly difficult but is essential for real-time performance management as well as for long-term operational improvement. Laser scanners do not provide any information beyond whether the code was read or not, and so provide no useful additional data.

Also, laser scanners have moving parts that are subject to wear and often require repair or replacement.

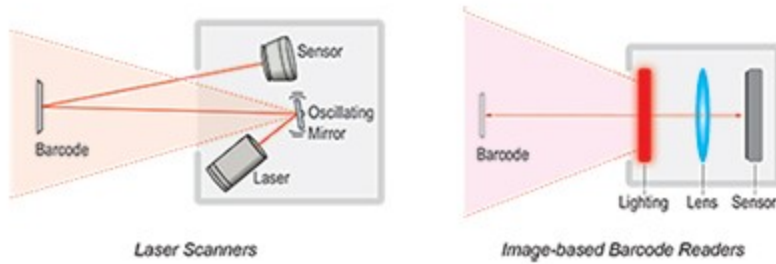
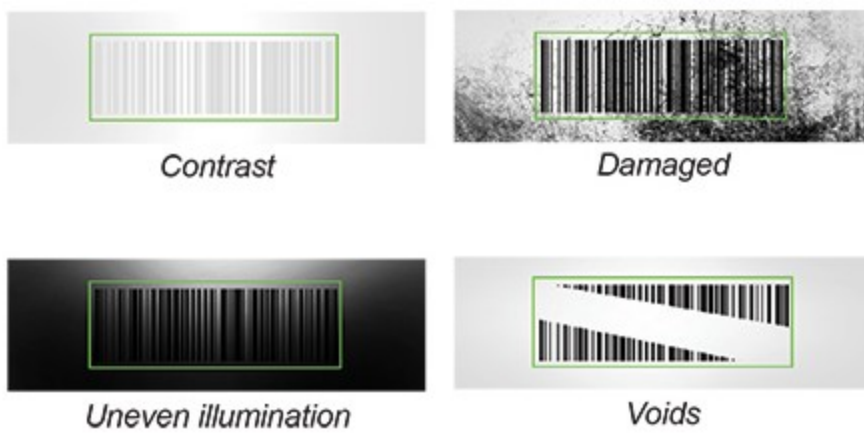


Image-based barcode readers

Image-based barcode readers like the DataMan product line from Cognex use an imager like those found in digital cameras and a microprocessor to analyze the images. They deliver increased read rates on poorly printed or damaged codes, provide the ability to save no-read images for performance feedback, and are designed with no moving parts which provide longer usable product life.

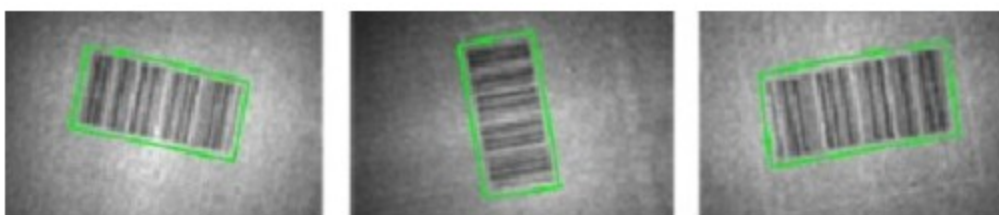
Read-rate performance

Image-based readers view the entire barcode, not just a single line, so they can use advanced decoding algorithms to overcome quiet zone violations and other code damage issues that cause no-reads with laser scanners.



Flexible code reading

Image-based code readers can read multiple 1D and 2D barcodes in a single image, regardless of orientation and condition.



Long-term reliability

Image-based barcode readers have no moving parts and are designed for long-term reliability and low maintenance.

Visualization

When the image-based barcode reader is running on the production line, operators have options that allow them to monitor the read rate statistics and look at the images that the barcode reader takes.

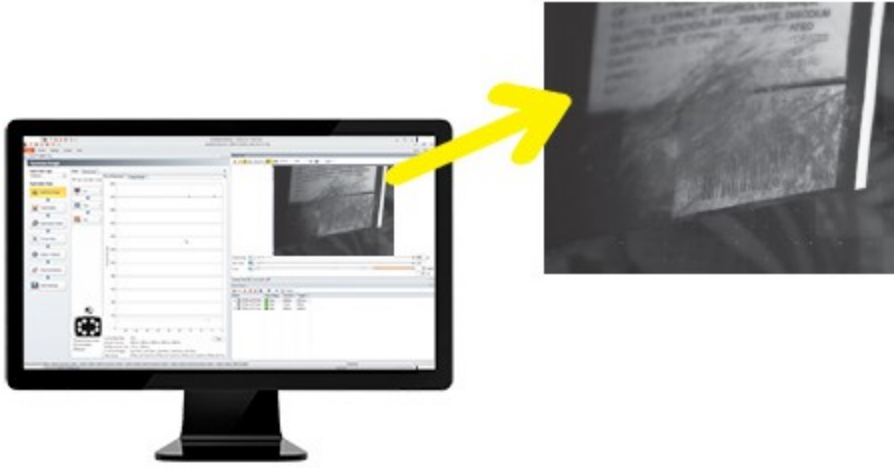


Image archiving

The most powerful image-based readers can be set up to archive images of reads and provide performance feedback.

 [Download White Paper: Making the Case for Image-Based Scanning for inbound and Outbound Logistics](#)

No-read diagnosis

The ability to [analyze no-reads](#) through image archiving provides the opportunity for continuous improvement. Reviewing saved images of packages or parts whose barcodes were not read can identify problems with reader setup, label print quality, package orientation, and other causes. With performance feedback, the root issue can be addressed in a continuous process improvement program.

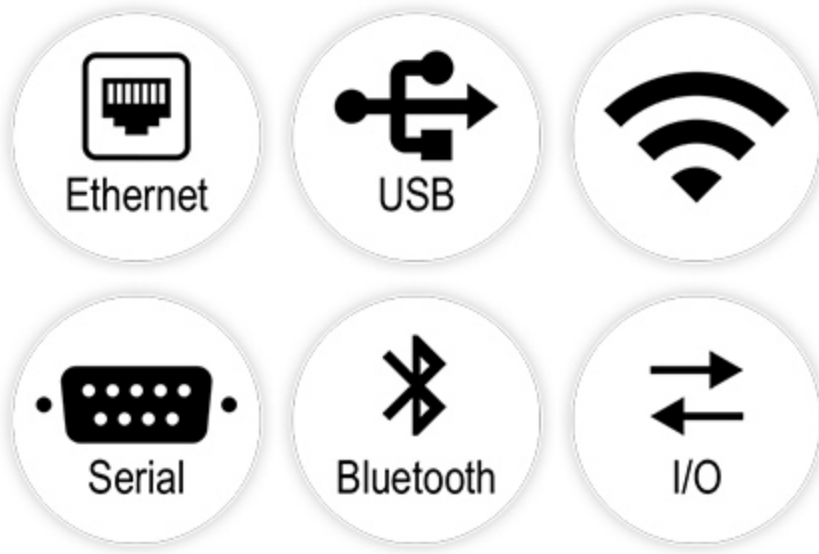
Barcode quality feedback

Image-based readers can provide feedback on the quality of the print so the manufacturers can make adjustments before they ship badly printed codes to their customers. This feedback can also be used to maintain vendor compliance on incoming freight. Non-compliance causes friction in the supply chain, which costs time and money.



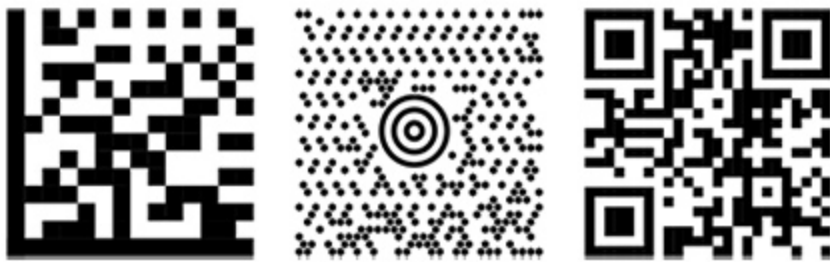
Communication

Industrial protocols like EtherNet/IP and PROFINET allow image-based barcode readers to be easily integrated into the factory network.



Future-Proofing

Many retail distribution facilities are only using 1D codes in their facility. However, 2D codes such as Data Matrix or QR are finding their way into the logistics supply chain. Cognex DataMan barcode readers provide a seamless path to integrating 2D codes into the operation.



Case studies

Here are a few examples of how some retailers achieved dramatic gains in read rates, lowered costs, and improved their operations.

Forever 21

The fashion chain's laser scanners had nearly 6% no-reads, so manual delivery to matching stations took 15% of worker time. Codes could be at varying angles, in different positions, wrinkled, or covered by a plastic bag that generated glare or distortion. One of its two label vendors provided lower-quality barcode labels which were less readable. Image-based barcode readers reduced no-reads to under 1% and saved \$1 million annually.

EDEKA

The German grocery chain needed to process incoming pallets quickly at its large distribution center. Incoming vendor shipment labels had to be checked for compliance with GS1 data formatting rules, labels were often damaged during transport or unloading from the truck, and the data had to be fed into the warehouse management system (WMS) automatically.

Image-based barcode readers improved read rate by 8% over the previous laser-based system, provided an easy-to-use system interface and simple Java scripting that integrated with the WMS, and improved vendor compliance by exporting images of non-compliant labels via TCP/IP to an FTP network location.

Making the investment

In a world where making a business case for technology investments can be tough, image-based barcode reading is a "no-brainer." Investments in image-based barcode reading technology to increase read rates have short ROI schedules. For example, a \$150,000 investment in image-based barcode technology that improves read rates by 0.9% leads to over \$270,00 in labor cost saved per year and pays for itself in less than 3 months.

\$150,000 INVESTMENT

improving read rates by 0.9% leads to:



722,050 reduction in reworked packages per year



\$270,769 labor cost saved per year



\$361,025 customer retention costs saved per year



<3 months ROI

Whether you are a member of the technical or operations team, or in management, image-based barcode reading technology offers a variety of additional benefits throughout the distribution or fulfillment center:

- For in-house technical teams, image-based barcode scanning equipment is easy to deploy within existing controls architecture. Cognex's image-based systems interact with all industrial POC protocols and do not require converters for installation and use.
- For operations personnel, the use of image-based barcode readers translates into fewer packages being handled manually in the DC.
- For facility directors, image-based barcode readers support an efficient and predictable operation and provide feedback that helps optimize operational processes.

[1] ["Worldwide ecommerce will approach \\$5 trillion this year,"](#) eMarketer.com, January 14, 2021.

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Tags: ID - 1D High Speed, Retail Distribution, Logistics, Barcode Readers, Fixed-mount Barcode Readers