



# BARCODE READERS

FIXED-MOUNT ■ HANDHELD ■ MOBILE

**COGNEX**

# THE GLOBAL LEADER

## IN MACHINE VISION AND INDUSTRIAL BARCODE READING

**Cognex®, the leading supplier of machine vision and industrial barcode reading solutions.**

With over 2 million systems installed in facilities around the world and over thirty seven years of experience, Cognex is focused on industrial machine vision and image-based barcode reading technology. Deployed by the world's top manufacturers, suppliers and machine builders, Cognex products ensure that manufactured items meet the stringent quality requirements of each industry.

Cognex solutions help customers improve manufacturing quality and performance by eliminating defects, verifying assembly and tracking information at every stage of the production process. Smarter automation using Cognex vision and barcode reading systems means fewer production errors, which equates to lower manufacturing costs and higher customer satisfaction. With the widest range of solutions and largest network of global vision experts, Cognex is the best choice to help you **Build Your Vision.™**

**\$806  
MILLION**  
2018 REVENUE

**OVER 37**  
YEARS IN THE BUSINESS

**500+**  
CHANNEL PARTNERS

GLOBAL OFFICES IN  
**20+ COUNTRIES**

**2,000,000+**  
SYSTEMS SHIPPED







# COGNEX BARCODE READERS ANY CODE, **EVERY TIME**

Nearly every product uses a 1D or 2D barcode to automate and simplify identification and data capture. The basic process in reading codes is to 1) illuminate the code, 2) locate the code, and 3) extract the data. Organizations must be able to read codes quickly and accurately for maximum efficiency and throughput.

Cognex image-based barcode readers decode 1D and 2D codes, from printed labels to the hardest to read direct part mark (DPM) codes, and deliver industry-leading read rates. Advanced technology, modular options, and easy setup helps reduce costs, optimize performance, increase throughput, and control traceability.

## INDUSTRIES

Cognex supplies solutions to virtually all manufacturing and logistics industry sectors, including:

- Aerospace
- Airport Baggage Handling
- Automotive
- Ecommerce Fulfillment
- Electronics
- Field Service
- Food and Beverage
- Medical Devices
- Pharmaceutical
- Retail Distribution

### Fixed-Mount Barcode Readers



### Handheld Barcode Readers



### Mobile Solutions



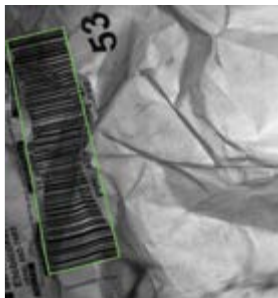
# PATENTED TECHNOLOGY FOR OPTIMAL PERFORMANCE AND TRACEABILITY

Cognex products are optimized with patented decoding algorithms and advanced technologies to ensure continuously high read rates for the most difficult and degraded 1D and 2D codes.



## 1DMax Advanced Algorithm

1DMax® is a 1D barcode reading algorithm optimized for omnidirectional barcode reading and extreme variations in contrast, blur, damage, resolution, quiet zone violations, and perspective distortion.



## Hotbars Image Analysis Technology

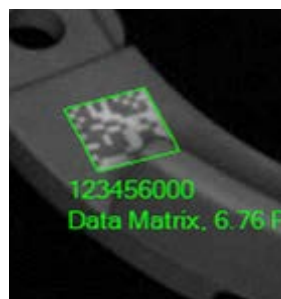
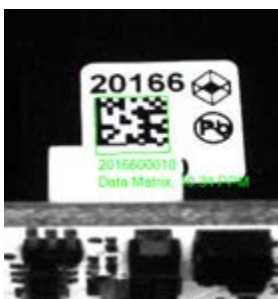
Grouped with 1DMax, Hotbars® locates and extracts 1D barcodes up to 10x faster than a typical reader, even with increased noise, large specular reflection, reduced quiet zone, limited contrast, and damage.

	TYPICAL 1D ALGORITHM	HOTBARS IMAGE ANALYSIS
Noise		
Specular		
Perspective		
Quiet Zone		
Contrast		
Damage		



## 2DMax Advanced Algorithm

2DMax® 2D barcode reading algorithm provides reliable 2D code reading despite code quality, printing method, or surface type.







## PowerGrid

PowerGrid® quickly locates 2D codes that exhibit significant damage to or complete elimination of a code's finder pattern, clocking pattern, or quiet zone.



No finder pattern



No finder or clocking pattern



Quiet zone violation

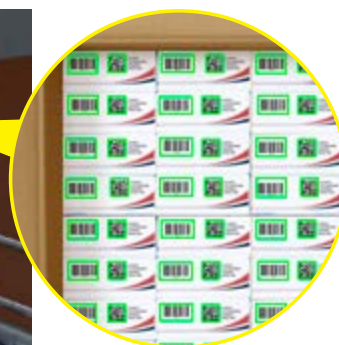


Stripe



## 1D/2D Auto-Discrimination Algorithm

1D/2D Auto-Discrimination reduces decode times for complex multi-code, multi-symbology label-based code applications.



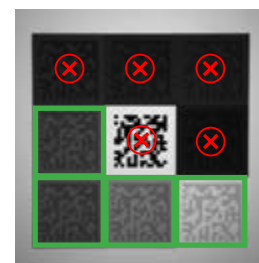
## High Dynamic Range (HDR) Technology

HDR imaging uses the latest CMOS image sensor technology, which is 16x more detailed than conventional sensors, to globally enhance image quality and contrast.

Target Source



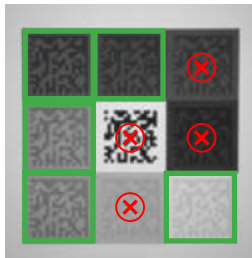
Conventional Sensor



## HDR+

HDR+ further increases localized contrast changes automatically. This creates a more uniform image in a single acquisition allowing greater depth-of-field, faster line speeds, and improved handling of difficult codes.

HDR



HDR+



*HDR+ technology enables reading an increased range of codes than is possible with conventional or other HDR technologies.*

# DATAMAN **FIXED-MOUNT** BARCODE READERS

DataMan® fixed-mount, image-based barcode readers offer advanced technology, processing power, modularity, and ease of use for challenging manufacturing and logistics applications.

## DataMan 70 Series

Compact design ideal for reading 1D and 2D label-based codes in tight application spaces.

### POWER



1.7X

### RESOLUTION



1.2 MP

### CONNECTIVITY



USB



Serial

### SYMBOLOLOGIES



### FEATURES



Hotbars



ESD-Safe



S-Mount



IP65



## DataMan 260 Series

Straight or right-angle modular design ideal for 1D barcodes, higher density 2D codes, or direct part mark (DPM) codes.

### POWER



2X

### RESOLUTION



1.2 MP

### CONNECTIVITY



Serial



Ethernet

### SYMBOLOLOGIES



### FEATURES



Hotbars



PowerGrid



Liquid Lens



Modular





## DataMan 360 Series

Most versatile reader offering modular lens and lighting options for a broad range of 1D and 2D code applications.

### POWER



2.5X

### RESOLUTION



2 MP

### CONNECTIVITY



### SYMBOLOLOGIES



### FEATURES



## DataMan 470 Series

Premium reader with multi-core processing power and advanced imaging technology for complex, high-throughput 1D and 2D code applications.

### POWER



7.5X

### RESOLUTION



3.1 MP

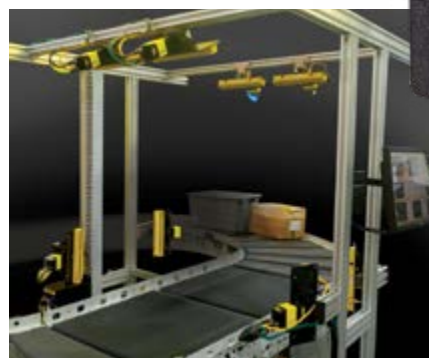
### CONNECTIVITY



















### SYMBOLOLOGIES





### FEATURES



# FIXED-MOUNT READER SPECIFICATIONS & FEATURES

	60 Series	70 Series	150 Series	260 Series	360 Series	470 Series	503 Series
 Resolution	752 x 480	752 x 480 1280 x 960			800 x 600 1280 x 1024 1600 x 1200	2048 x 1536	2048 x 1088
 Processing Power <sup>1</sup>	1X	1.7X	2X		2.5X	7.5X	9X
 FPS	60				Up to 60	Up to 80	150
 Model Variants	L, Q, QL, S	L, Q, QL, S	Q, QL, S, X		L, Q, QL, X		QL, X
Lenses							
 Liquid Lens			✓	✓	✓	✓	✓
 C-mount		✓	✓	✓	✓	✓	✓
 S-mount	✓	✓	✓	✓	✓		
Symbologies							
 1D	✓	✓	✓	✓	✓	✓	✓
 2D	✓	✓	✓	✓	✓	✓	✓
 Multi-code	✓	✓	✓	✓	✓	✓	✓
Decoding Algorithms							
 1DMax with Hotbars	✓	✓	✓	✓	✓	✓	✓
 2DMax			✓	✓	✓	✓	✓
 PowerGrid			✓	✓	✓	✓	
Technologies							
 1D/2D Auto-Discrimination						✓	
 HDR						✓	
 HDR+						✓	



	60 Series	70 Series	150 Series	260 Series	360 Series	470 Series	503 Series
<b>Lighting Modularity</b>							
 Integrated Lighting	✓	✓	✓	✓	✓	✓	✓
 External Lighting					✓	✓	✓
<b>Communications</b>							
 Discrete I/O	✓	✓	✓	✓	✓	✓	✓
 Serial	✓	✓	✓	✓	✓	✓	✓
 Ethernet	✓			✓	✓	✓	✓
 Gigabit Ethernet						✓	
 USB		USB-C	USB				
<b>Additional Features</b>							
 Modular	✓	✓	✓	✓	✓	✓	✓
 Device Feedback				✓	✓	✓	✓
 Laser Aimer					✓	✓	✓
 IP Rating	IP40	IP65				IP67	IP65
 ESD-Safe Housing <sup>2</sup>		✓	✓	✓	✓	✓	
 SD card					✓	✓	



### <sup>1</sup> Processing Power

The processing power of a reader is measured by how quickly it decodes a barcode and outputs the resulting data. A comparison test simulating a complex 1D/2D multi-code application (consisting of four varied 1D codes and seven varied 2D codes together) was used to determine the processing power of each DataMan fixed-mount barcode reader.



### <sup>2</sup> ESD-Safe Housing

Protects devices and flammable environments from electrostatic discharge (ESD), the sudden flow of static electricity between two objects.

# MODULAR DESIGN FOR MAXIMUM FLEXIBILITY

Cognex's commitment to continuous innovation ensures modular software and hardware configuration options to solve any barcode reading challenge. The example below represents the modular capabilities of Cognex fixed-mount, handheld, and mobile barcode readers.



Patented technology and advanced algorithms optimize performance.

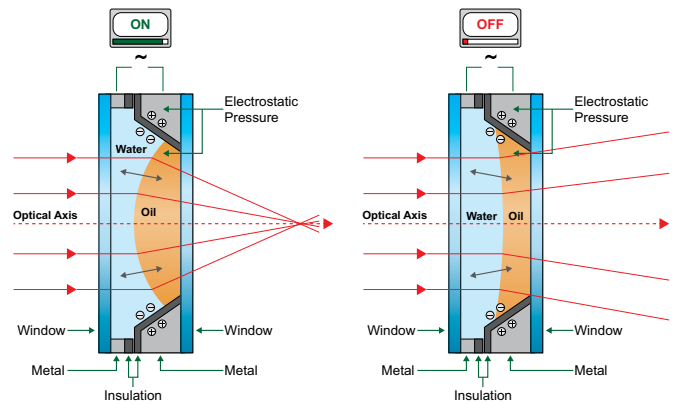






## Liquid lens autofocus technology

Liquid lens autofocus technology is available for fixed-mount, handheld, and mobile barcode reader models to automatically adapt to changes in working distances for greater depth-of-field. Unlike traditional zoom lenses, liquid lenses do not have any moving parts that can wear out or fail, saving time and maintenance costs.



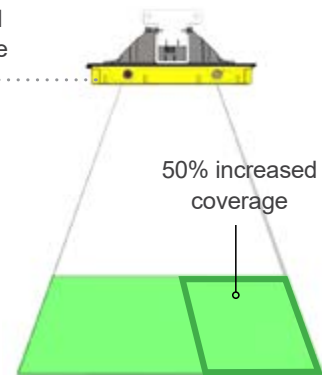
## Greater coverage with fewer readers

The Xpand™ technology accessory is available to increase the field-of-view coverage of a single barcode reader by over 50%. This enables wider belt coverage using fewer readers, simplifying setup and installation, and reducing overall cost.

### Single Reader

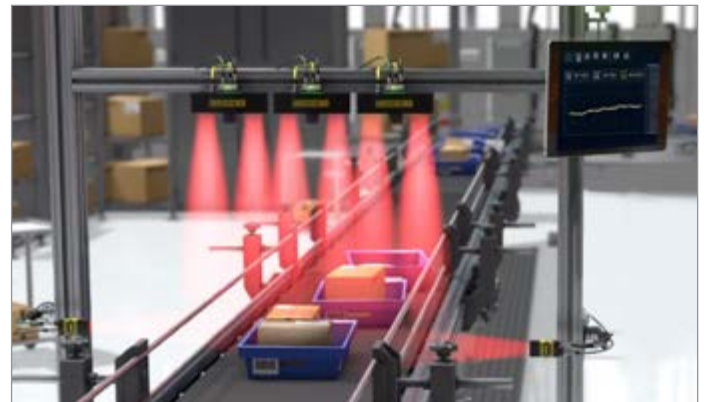


### Single Reader + Xpand Accessory



## Performance feedback for process optimization

**Cognex Real Time Monitoring (RTM)** technology provides performance feedback for networked DataMan fixed-mount barcode readers, including no-read tracking, code quality metrics, heat mapping, and configuration audit trails. A light version of RTM (RTM Lean) is included within the DataMan Setup Tool.



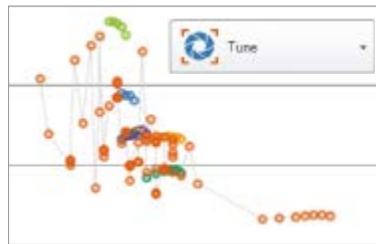
# EASY SETUP AND OPERATION

## DataMan Setup Tool

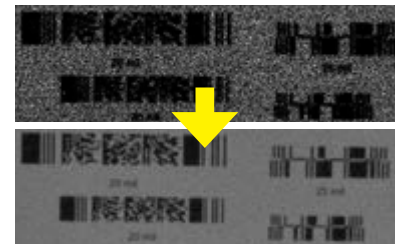
The DataMan Setup Tool software simplifies installation and operation of Cognex barcode readers. Intelligent auto-tuning and application assistants guide the user to quickly optimize complex parameters with ease. The Setup Tool captures images and data in real time allowing users to review and track device result history as well as other parameters such as code quality.



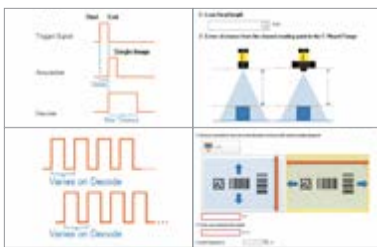
Step-by-step visual guidance



Auto-tune and autofocus



Pre- and post-image optimization tools



Application assistants help optimize parameters



Independent lighting controls

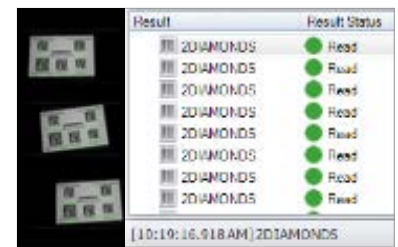
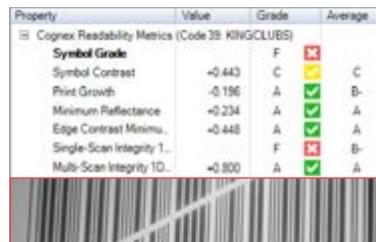


Image & read result history



Basic and advanced scripting for custom data formatting



Process control metric feedback



Multiple read setups allow for greater product & environmental variation



# DATAMAN BARCODE VERIFIERS

Barcode verification is the process of grading the quality of barcodes. Barcode verifiers capture images and generate reports to demonstrate compliance to parameters within industry standardization guidelines.

## DataMan 8070 Series Verifier

Packed with powerful lighting options, robust grading algorithms, a high-speed processing engine, and a high-resolution camera to grade the most difficult DPM codes.

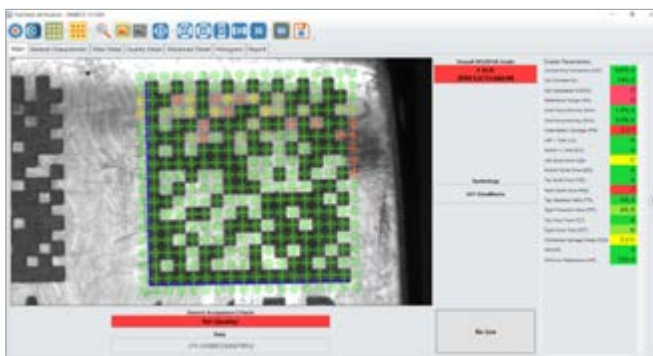


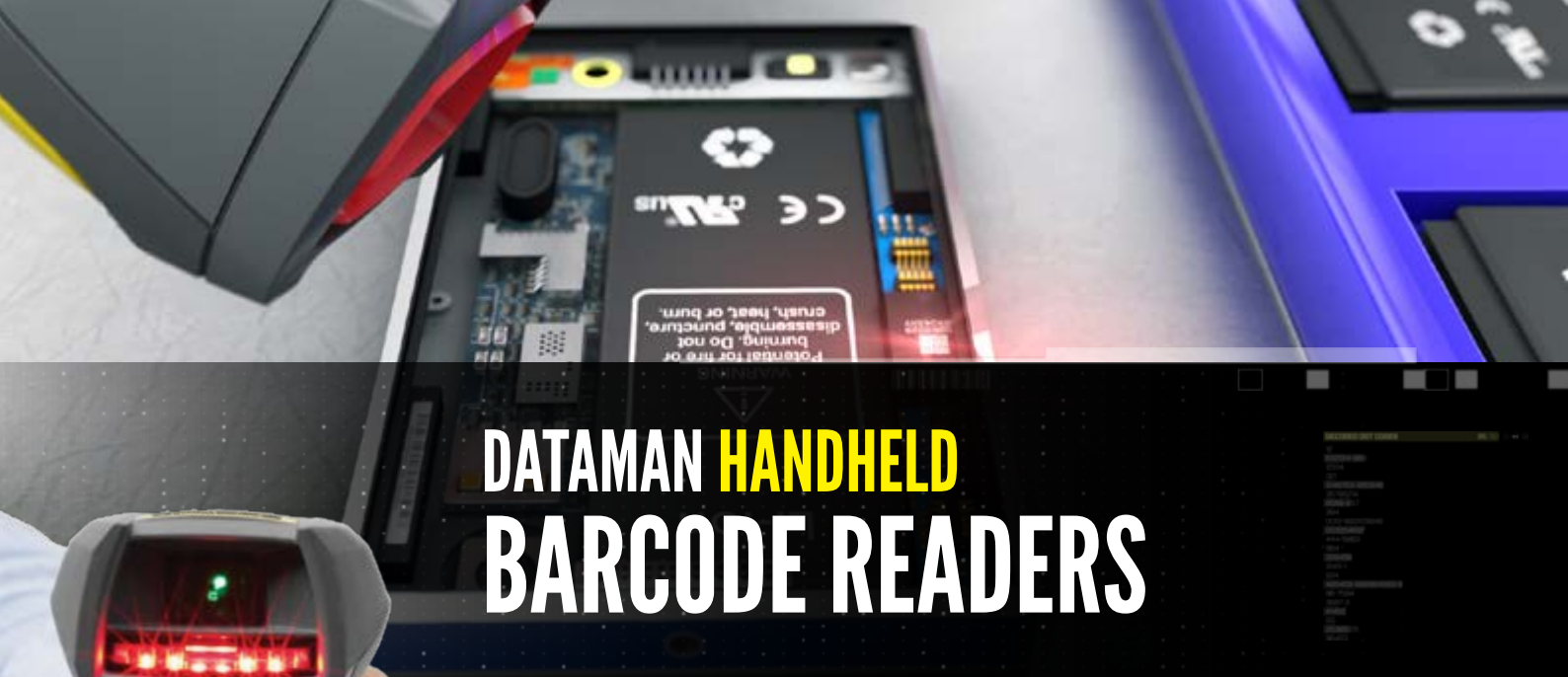
30, 45, and 90 degree lighting



## Reliable and repeatable results

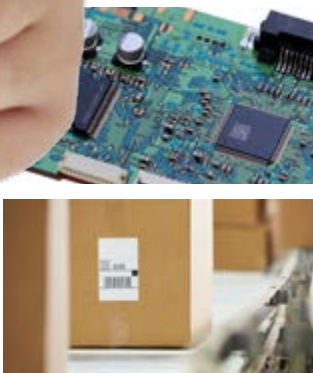
The DataMan Setup Tool calculates an overall grade based on several quality parameters. Detailed results show whether codes meet industry standards. Auto-generated reports can be used to demonstrate compliance, as well as help pinpoint printing and process control issues.





# DATAMAN **HANDHELD** BARCODE READERS

DataMan handheld barcode readers provide best-in-class performance with patented Hotbars technology for 1D barcodes and PowerGrid technology for 2D codes.



## DataMan 8050 Series

Provides high-speed performance for well-marked DPM and label-based codes in the harshest environments.

### CONNECTIVITY



### SYMBOLOLOGIES



### FEATURES



## DataMan 8070 Series

The latest technology combined with modular lighting and lensing provides the best image formation for DPM codes as well as extended-range 1D and 2D label-based barcode reading.

### RESOLUTION



### CONNECTIVITY



















### SYMBOLOLOGIES



### FEATURES



# HANDHELD READER SPECIFICATIONS & FEATURES

	8050 Series	8070 Series	8600 Series
 Resolution	752 x 480	1.2 MP	1280 x 1024
 Model Variants	HD, HDX, X	DL, ER	HDX
<b>Lenses</b>			
 Liquid Lens		✓	✓
<b>Symbologies</b>			
 1D	✓	✓	✓
 2D	✓	✓	✓
<b>Decoding Algorithms</b>			
 1DMax with Hotbars	✓	✓	✓
 2DMax	✓	✓	✓
 PowerGrid	✓	✓	✓
<b>Lighting Modularity</b>			
 Integrated Lighting	Direct lighting	Half-polarized lighting	UltraLight <sup>1</sup>
<b>Communications</b>			
 Ethernet with Industrial Protocols	✓	✓	✓
 Serial	✓	✓	✓
 USB	✓	✓	✓
 Bluetooth	✓	✓	✓
 Wireless	✓		✓
<b>Additional Features</b>			
 Laser Aimer		✓	✓
 Modular	✓	✓	✓
 ESD-Safe Housing <sup>2</sup>	✓		
 Drop Test	50 drops from 2 meters		
 IP Rating	IP65		



## <sup>1</sup> UltraLight

UltraLight® technology uses polarized, low-angle, and diffuse lighting to provide the best image formation and illumination for the hardest-to-read DPM codes.



## <sup>2</sup> ESD-Safe Housing

Protects devices and flammable environments from electrostatic discharge (ESD), the sudden flow of static electricity between two objects.





# MOBILE SOLUTIONS

Cognex offers the only end-to-end family of mobile scanning solutions, achieving best-in-class 1D, 2D, and direct part mark (DPM) barcode reading performance.

## MX-1502 and MX-1000 Series

Combines fast, image-based 1D and 2D barcode reading with iOS® and Android® mobile devices for standard, long, and extended range applications.

### RESOLUTION



### SYMBOLOLOGIES



### FEATURES



## MX-100 Series

Mobile device accessory attaches to an Otterbox® uniVERSE Case System® and transforms smartphones into better barcode readers with innovative aiming and lighting.

### SYMBOLOLOGIES



### FEATURES



## Cognex Mobile Barcode Software Development Kit (SDK)

The Cognex Mobile Barcode SDK is a comprehensive software tool for all facets of mobile barcode scanning. It enables tailoring and maintaining a single application for all mobile devices across an entire organization.

The SDK can be used with any supported device, including:

- MX-1000 and MX-1502 Series mobile terminals
- MX-100 Series mobile barcode readers
- Smartphone and tablet cameras (license required)



# MOBILE SOLUTIONS SPECIFICATIONS & FEATURES

	MX-100	MX-1000	MX-1502
<b>Resolution</b>	Device dependant	752 x 480	1.2 MP
<b>Scan Range</b>	SR	SR	LR/ER
<b>Lenses</b>			
<b>Liquid Lens</b>			✓
<b>Symbologies</b>			
<b>1D</b>	✓	✓	✓
<b>2D</b>	✓	✓	✓
<b>DPM</b>		✓	✓
<b>Decoding Algorithms</b>			
<b>1DMax with Hotbars</b>		✓	✓
<b>2DMax</b>		✓	✓
<b>PowerGrid</b>			✓

	MX-100	MX-1000	MX-1502
<b>Lighting</b>			
<b>Integrated Lighting</b>	✓	✓	✓
<b>Modular Lighting</b>			✓
<b>Operating System</b>			
<b>iOS</b>	✓	✓	✓
<b>Android</b>		✓	✓
<b>Additional Features</b>			
<b>Modular</b>	✓	✓	✓
<b>Pistol Grip</b>		✓	✓
<b>Drop Test</b>	OtterBox Certified	50 drops from 2 meters	
<b>IP Rating</b>	IP54	IP65	IP65



The modular design of Cognex mobile products supports a number of existing and future iOS and Android devices, leveraging the latest communication technologies including 3G, 4G, 4G LTE, Wi-Fi, Bluetooth, and more.



# MODELS AND SYMBOLOGIES

Regardless of code symbology, size, quality, printing method, or surface, Cognex has a barcode reader that can read the code, ensuring maximum efficiency and traceability.

Model	Reads
L	1D fixed position barcodes
QL	1D omnidirectional barcodes
S	Slow or indexed well-marked 1D and 2D codes
Q	High-speed 1D and 2D codes
X	Challenging 1D and 2D codes, including DPM codes
UHD	Ultra-small, well-marked 2D DPM codes (0.7 mil)
HD	Small 1D and 2D codes (6-10 mil)
HDX	Smaller 1D and 2D codes (2-5 mil)
DL	Well-marked 1D and 2D DPM codes
SR	Codes from standard range
LR	Dense or small codes from long range (high shelves)
ER	Codes from extended-range (very high shelves)

## 1D Codes

UPC/EAN/JAN



Codabar



Code 11



Code 93



Code 128



GS1 DataBar



Code 25



Code 39



Interleaved 2 of 5



MSI Plessey



Pharmacode



## 2D Codes

Data Matrix



QR



Micro QR



PDF417



MicroPDF



Aztec Code



DotCode



## Postal Codes

POSTNET



Intelligent Mail Barcode



PLANET, Australian Post, Japan Post, Royal Mail, UPU





# INDUSTRY 4.0

Industry 4.0, or “The Industrial Internet of Things,” refers to a set of emerging innovations in advanced automation, machine vision, Big Data, cloud computing, and machine learning which will revolutionize manufacturing. Industry 4.0 demonstrates tremendous potential to bolster productivity, reduce waste, refine product quality, enhance manufacturing flexibility, and decrease operating costs.

Machine vision and industrial barcode reading will be a critical part of automation systems in Industry 4.0. As data analytics capabilities progress, the high volume of data accessible through vision and barcode reading equipment will be used to identify and flag defective products, understand their deficiencies, and enable fast and effective intervention in the Industry 4.0 factory.

**For more information,**  
visit [cognex.com/industry-4-0](http://cognex.com/industry-4-0).



# BUILD YOUR VISION

## BARCODE READERS

Cognex industrial barcode readers and mobile terminals with patented algorithms provide the highest read rates for 1D, 2D and DPM codes regardless of the barcode symbology, size, quality, printing method or surface.

[www.cognex.com/BarcodeReaders](http://www.cognex.com/BarcodeReaders)



## 2D VISION

Cognex machine vision systems are unmatched in their ability to inspect, identify and guide parts. They are easy to deploy and provide reliable, repeatable performance for the most challenging applications.

[www.cognex.com/machine-vision](http://www.cognex.com/machine-vision)



## 3D VISION

Cognex In-Sight laser profilers and 3D vision systems provide ultimate ease of use, power and flexibility to achieve reliable and accurate measurement results for the most challenging 3D applications.

[www.cognex.com/3D-vision-systems](http://www.cognex.com/3D-vision-systems)



## VISION SOFTWARE

Cognex vision software provides industry leading vision technologies, from traditional machine vision to deep learning-based image analysis, to meet any development needs.

[www.cognex.com/vision-software](http://www.cognex.com/vision-software)



# COGNEX

Companies around the world rely on Cognex vision and barcode reading to optimize quality, drive down costs and control traceability.

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