

# COGNEX

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# ***SENSORS***

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PRODUCT GUIDE 2007

In-Sight® Fixed-Mount ID Readers – fast, versatile, and reliable code reading for unmatched part traceability and process control.



**Fixed-Mount  
ID Readers**

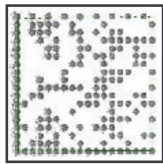
# Read Every Mark on Every Part... Every Time

**Cognex® In-Sight® fixed-mount ID readers provide unmatched code reading performance. These readers integrate lighting, camera, ID software, processor and communications into an industrial-grade design, making them the most versatile and rugged fixed-mount readers available today.**

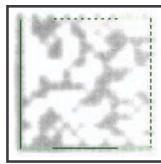
In-Sight ID readers incorporate IDMax™, a breakthrough in Data Matrix code reading software based upon Cognex patented PatMax® technology. IDMax handles a wide range of degradations to the appearance of the code, no matter what the cause, allowing In-Sight readers to deliver the industry's most reliable reading.

The high-speed digital acquisition system, DSP architecture, and optimized reading algorithms, assure continuously high read rates in direct part mark and label-based identification applications on the fastest production lines.

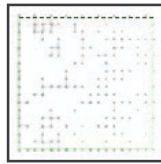
## Outstanding Performance with Problem 2D Codes



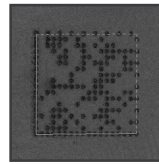
Model Image



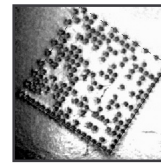
Poor Focus



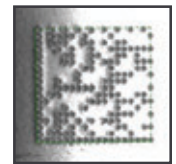
Washed Out



Low Contrast



Finder "L" Pattern



Background Problems

## A Wide Range of ID Reader Models

The In-Sight family of fixed-mount ID readers provides performance, resolution, housing, and configuration choices that enable a wide array of applications.



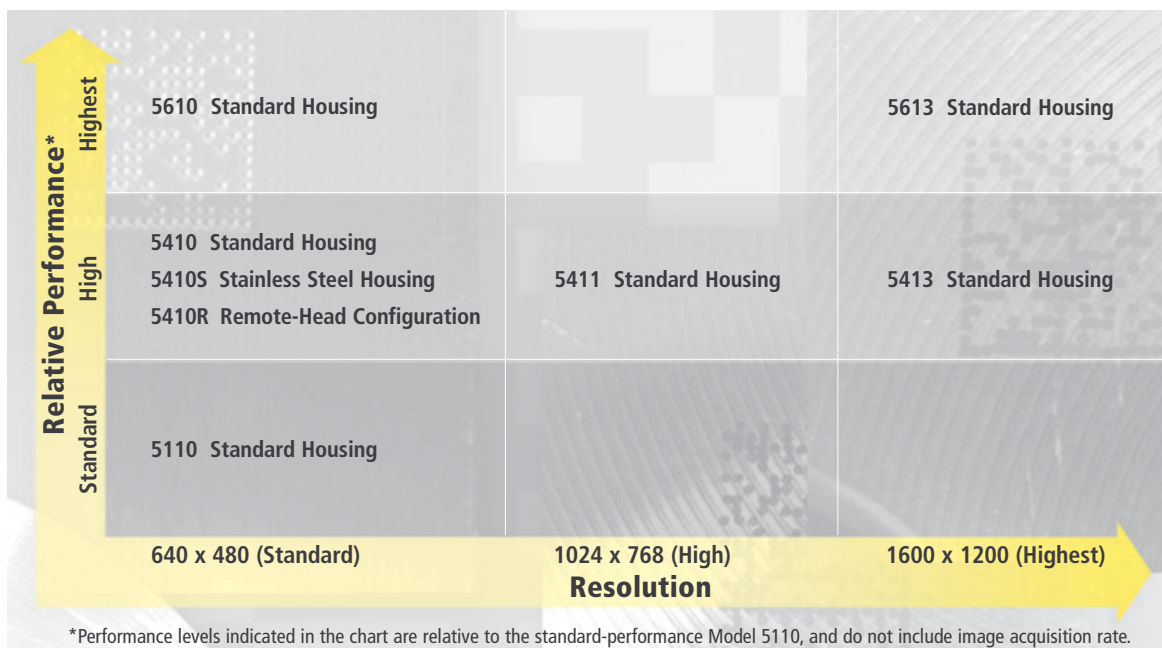
Standard Housing



Stainless Steel Housing



Remote-Head Configuration



# Fast, Reliable Code Reading

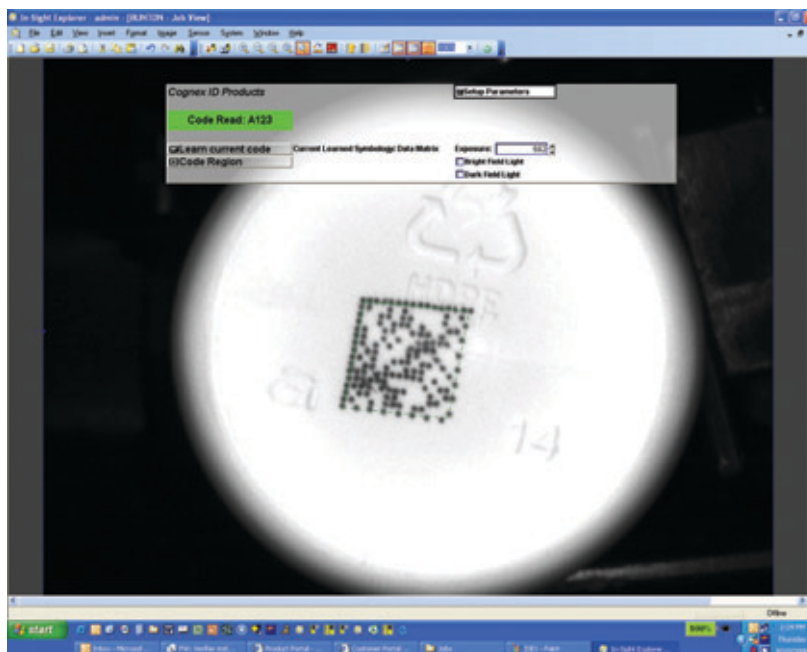
Industrial identification is very challenging due to variations in mark appearance, uncertainty of part position, and high production line speeds. The combination of sensor, processor architecture, and optimized ID software, allows In-Sight fixed-mount readers to meet high-speed production requirements, while maintaining accurate reading.

The ability to read direct part marks, codes on rotated parts, multiple codes in the field of view, and provide working distance flexibility makes these ID readers ideal for virtually any identification application. And, quality metrics are provided, which indicate how well the code marking process is working.

In-Sight Explorer provides a powerful and completely integrated code reader configuration, management, and operator interface ... all within the single software package.

## Advantages

- Real-time reading of 1D and 2D codes at rates over 7200ppm
- Includes IDMax – The industry's most reliable Data Matrix reading software
- Industry-standard mark quality assessment metrics for 1D and 2D codes
- Fast setup, plus reliable, robust operation



*In-Sight Explorer ensures the shortest possible time from opening the box to reading codes.*

# Reliable Code Reading for All Industries

In-Sight ID readers are ideal for part traceability and process control in many industries, including automotive, electronics, medical, pharmaceutical, consumer products, food, beverage, and aerospace. Some of the many applications include:

- Reading 2D codes on torque converters and jet engine turbine blades
- Reading 2D marks on electronic components such as PCBs, IC packages, and lead frames
- Tracking contact lens parts and surgical instruments
- Reading 2D and RSS/CS codes on pharmaceutical packages
- Matching bar codes on medical test kit boxes with marked contents
- Reading high-speed 1D, 2D, and postal codes for parcel, package, and document sorting applications



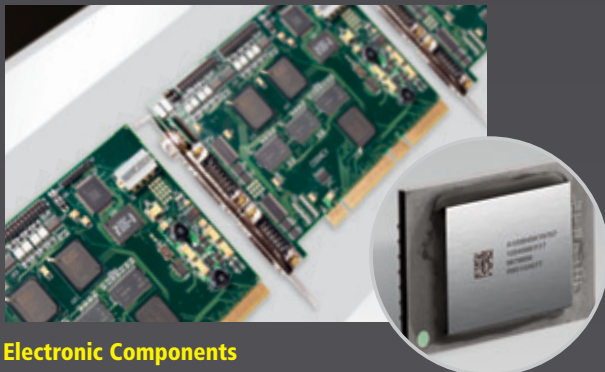
## Automotive Parts

In this application, a 2D code laser-etched onto a fuel injector is read.



## Pharmaceuticals

Cognex ID readers provide accurate reading of multiple code formats in a single view.



## Electronic Components

Electronics manufacturers moving from bar code labels to Data Matrix due to space constraints and the need to include more data on parts use In-Sight fixed-mount ID readers to identify boards and components.



## Packaging

In-Sight fixed-mount ID readers are ideally-suited to a wide range of packaging applications.

# Versatile, Rugged and Simple to Use

- **Die-cast aluminum housing** with sealed M12 connectors and protective lens cover provides an IP67 (NEMA 6) rating for dust and wash-down protection where required
- **IP68-rated stainless steel model** allows code reading in wash-down environments. And, the remote head model is ideal for applications where mounting space is limited
- **Built-in lighting and optics**, with an array of optional lighting kits
- **Built-in Ethernet 10/100 Base-T interface** for factory floor communications



Die-cast aluminum housing, IP67 (NEMA 6) rating



Remote head, IP67 (NEMA 6) rating



Stainless steel, IP68 rating

# Specifications

## ID TOOLS

ID Codes	Code 3 of 9; Code 128; Interleaved 2 of 5; Reduced Space Symbology (RSS); UPC/EAN; PostNet; Planet Code; Pharma Code; UPU-57
2D Codes	Data Matrix; QR Code; PDF417; Composite Symbology (CC-A); MicroQR

## QUALITY ASSESSMENT METRICS

1D Codes	ISO 15416
Data Matrix	ISO 16022, AS9132, ISO 15415 Cognex Supplemental Metrics
QR Code	ISO 18004

## MEMORY

Job/Program	16MB non-volatile flash memory; Unlimited storage via remote network device
Image processing	64MB

## IMAGE

Resolution	
5110/5410/5410S/5410R/5610	640 x 480
5411	1024 x 768
5413/5613	1600 x 1200
Electronic Shutter Speed	16µs to 1000ms
Acquisition rate (Exposure dependent)	Rapid reset, progressive scan, full-frame integration
5110/5410/5410S/5610	Up to 60 full frames per second
5410R	Up to 40 full frames per second
5411	Up to 20 full frames per second
5413/5613	Up to 15 full frames per second
Lens type	C-mount

## I/O

Trigger	1 opto-isolated, acquisition trigger input Remote software commands via Ethernet and RS232
Trigger voltage	ON 20 to 28V (24V nominal); OFF 0 to 3V (12V nominal threshold)
Trigger current	ON 0.9 to 1.3mA; OFF <150µA Resistance ~22,000 Ohms
Trigger delay	250 µSec latency between leading edge of trigger and start of acquisition. Input pulse should be minimum of 1ms wide.
Discrete inputs	8 inputs available, using optional Model 1450 I/O Expansion Module.
Discrete outputs	2 built-in, high-speed outputs 8 additional outputs available, using optional Model 1450 I/O Expansion Module.
High-speed output voltage	28V maximum through external load
High-speed output current	200mA maximum sink current OFF state leakage current 200µA maximum External load resistance 120 to 10K Ohms
Status LEDs	Power, Network Status, Network Traffic, 2 user configurable

## COMMUNICATIONS

Network	1 Ethernet port, 10/100 BaseT, TCP/IP protocol. Supports Ethernet/IP and ModBus/TCP. Supports DHCP (factory default) or static IP address
Serial	1 RS-232C port (1200 to 115,200 baud rates. 1200 and 2400 baud is not supported by the Model 1450 I/O Expansion Module.)

## POWER

Power consumption	
5110/5410/5410S/5411	24VDC ± 10%, 350mA
5410R	24VDC ± 10%, 250mA
5113/5610	24VDC ± 10%, 500mA
5613	24VDC ± 10%, 600mA

## MECHANICAL

Material and finish	
All models except 5410S/5410R/5610/5613	Die-cast aluminum housing, painted
5410R	Processor: Die-cast aluminum housing, painted Camera: Anodized aluminum housing
5410S	ASTM 316L stainless steel electropolished-passivated
5610/5613	Die-cast aluminum housing, painted. Powder-coated back plate

## Mounting

All models except 5410R	Eight M4 threaded mounting holes (four front and four back)
5410R Processor	Four M4 threaded holes on back

## Dimensions (H x W x D) w/o lens cover

All models except 5410S/5410R/5610/5613	123.2mm (4.85in) x 61.4mm (2.42in) x 43.5mm (1.71in)
5410S (with lens cover)	124.0mm (4.88in) x 61.4 (2.42in) x 90.6 (3.57in)
5410R Processor	34.0mm (1.34in) x 61.4mm (2.42in) x 136.0mm (5.35in)
5610/5613	124.1mm (4.89in) x 61.4mm (2.42in) x 59.4mm (2.34in)
	Lens cover adds 40.5mm (1.59in) to depth

## Weight

All models except 5410S/5410R/5610/5613	297.6g (10.5 oz) lens cover installed, without lens
5410S	909.45g (2 lb, .08oz) lens cover installed, without lens
5410R Processor	294.8g (10.4 oz)
5610	409g (14.4 oz) lens cover installed, without lens
5613	463g (16.3 oz) lens cover installed, without lens

## ENVIRONMENTAL

Operating temperature	0°C to 45°C (32°F to 113°F)
Operating humidity	0 to 95%, non-condensing
Storage temperature	-30°C to 80°C (-22°F to 176°F)
Storage humidity	0 to 95%, non-condensing
Protection	
All models except 5410S	IP67 (NEMA Type 6) with lens cover installed
5410S	IP68 with lens cover installed
Shock	80 Gs (800 M/S <sup>2</sup> at 11 ms) per IEC 68-2-27 EA
Vibration	10 Gs (10- to 500 Hz at 100 M/S <sup>2</sup> / 15mm for two hours in each axis) per IEC 68-2-6FC

## CERTIFICATIONS

Approvals	CE, UL, CUL, FCC
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