



COGNEX
ID PRODUCTS



FIXED-MOUNT ID READERS



**PRODUCT OVERVIEW
2006**

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.

Models are available for all fixed-mount code reading applications:

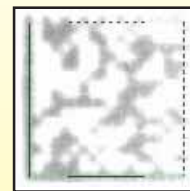
In-Sight 5110

- Provides 1D and 2D decoding for Direct Part Mark Identification
- Supports ISO and AS 9132 mark quality metrics for 1D and 2D code verification

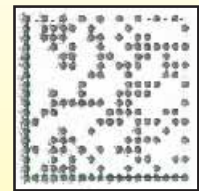
In-Sight 5410/5410S/5410R

- 5410 provides all model 5110 capabilities, with additional processing power for high-speed reading and mark quality assessment, and for reading difficult-to-read marks.

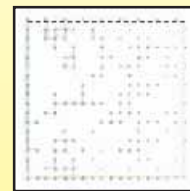
Outstanding Performance with Problem 2D Codes



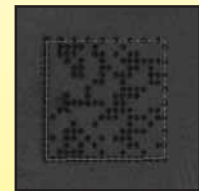
Poor Focus



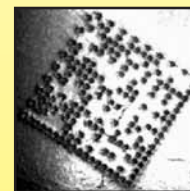
Model Image



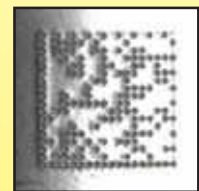
Washed Out



Low Contrast



Finder Degradation



Background Problems

- 5410S stainless and 5410R remote head models extend the application versatility of the 5410 model.

In-Sight 5411/5413

- Model 5411 adds high-resolution (1024 x 768) imaging to model 5410 functionality; model 5413 adds the highest resolution (1600 x 1200) imaging.

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*

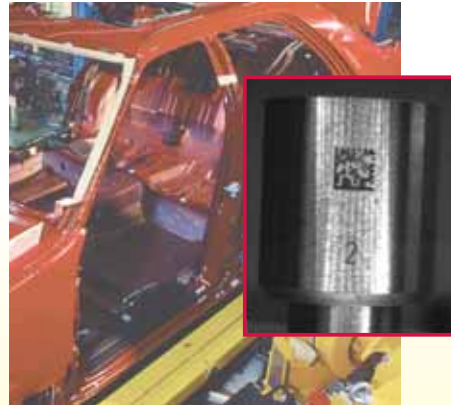


In-Sight Explorer ensures the shortest possible time from opening the box to reading codes.

RELIABLE CODE READING FOR MANY 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



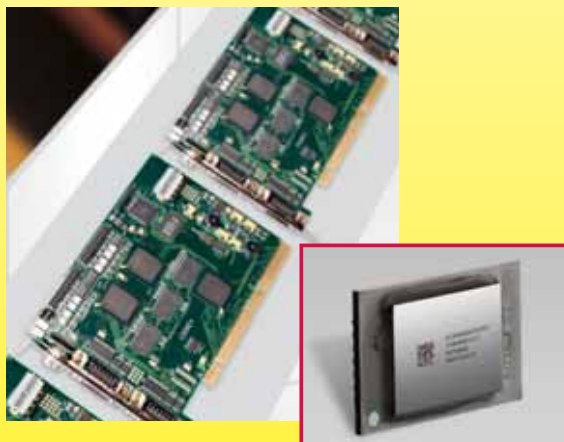
Automotive Parts

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; an array of optional lighting kits available
- Built-in Ethernet 10/100 Base-T interface for factory floor communications



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



*Stainless steel,
IP68 rating*



*Remote head,
IP67 (NEMA 6) rating*

SPECIFICATIONS

Note: Dimensional drawings of all In-Sight Fixed-Mount ID Readers, and additional specifications for all models, are available in the *Industrial Grade ID Readers* section of www.cognex.com/specs.

ID Tools	
1D 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
2D Codes	
Data Matrix	ISO 16022, AS9132, ISO 15415 Cognex Supplemental Metrics
QR Code	ISO 18004
Firmware	
	In-Sight version 2.70 and later
Memory	
Job/Program	16MB non-volatile flash memory; Unlimited storage via remote network device
Image processing	64MB
Image	
Resolution	5110/5410/5410S/5410R: 640 x 480 5411: 1024 x 768 5413: 1600 x 1200
Electronic shutter speed	16µs to 1000ms
Acquisition rate (Exposure dependent)	Rapid reset, progressive scan, full-frame integration 5110/5410/5410S: Up to 60 full frames per second 5410R: Up to 40 full frames per second 5411: Up to 20 full frames per second 5413: 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 Each line rated at a maximum 200mA, protected against overcurrent, short circuit, and transients from switching inductive loads. High current inductive loads require external protection diode.
Status LEDs	Power, Network Status, Network Traffic, 2 user configurable

Lighting	
Lighting methods	May be used with Cognex external light modules. The integrated light ring included in optional Image Formation System (IFS) Kits, or the optional Diffused Ring Light may be used with all models except the 5410R.

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: 24VDC ± 10%, 500mA

Mechanical	
Material and finish	All models except 5410S and 5410R: Die-cast aluminum housing, painted 5410R: Processor: Die-cast aluminum housing, painted Camera: Anodized aluminum housing 5410S: ASTM 316L stainless steel electropolished-passivated
Mounting	All models except 5410R: Eight M4 threaded mounting holes (four front and four back) 5410R Processor: Four M4 threaded mounting holes on back of sensor
Dimensions	All models except 5410S and 5410R: With lens cover installed: 84mm (3.34 in) x 124.7mm (4.91 in) x 61.6mm (2.43 in) Without lens cover installed: 41mm (1.62 in) x 124.7mm (4.91 in) x 61.6mm (2.43 in) 5410S: 91.44mm (3.60 in) x 124.21mm (4.89 in) x 61.47mm (2.42 in) with lens cover installed 5410R Processor: 3.9mm (1.34 in) x 136.2mm (5.36 in) x 61.4mm (2.42 in)
Weight	All models except 5410S and 5410R: 297.6g (10.5 oz) lens cover installed, without lens 5410S: 909.45g (2 lb, .08 oz) lens cover installed, w/o lens 5410R Processor: 294.8g (10.4 oz)

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 ² at 11 ms) per IEC 68-2-27 EA
Vibration	10 Gs (10-to 500 Hz at 100 M/S ² / 15mm for two hours in each axis) per IEC 68-2-6 FC

Certifications	
Approvals	CE, CUL, FCC

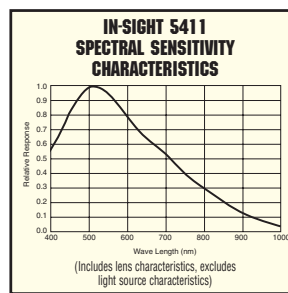
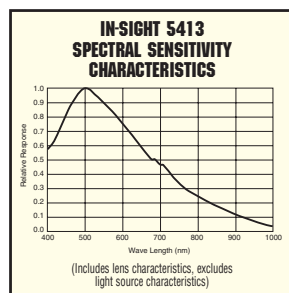
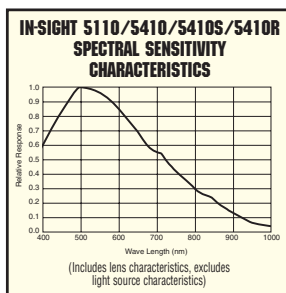


Image Formation System (IFS) Kits		
Kit Part Number	Lens Attributes	
	Working Distance (mm)	Field of View (mm)
IFS-RRL050-0008	59	8
IFS-RRL050-0012	75	12
IFS-RRL050-0018	103	18
IFS-RRL050-0027	149	27
IFS-RRL050-0040	218	40
IFS-RRL050-0060	324	60
IFS-RRL050-0090	484	91



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