

COGNEX

Advanced machine vision made easy

High-speed, high-resolution line scan camera with built-in AI

In-Sight 3800 Line Scan Series



Unmatched accuracy and speed for complex manufacturing inspections

In-Sight 3800 Line Scan Series

The In-Sight 3800 Line Scan is a high-speed, high-resolution camera designed for demanding industrial manufacturing applications. With advanced AI capabilities and ultra-fast processing, it effectively detects even the smallest features and defects at line speeds. This vision system excels in performing detailed inspections on **continuous webs, cylindrical surfaces, large parts, and parts with complex shapes and patterns.**

Key Features

- **AI Capabilities:** Improve quality control with AI-powered defect detection
- **High-Resolution Imaging:** Detect even the smallest defects and features to ensure product quality and reduce the risk of costly errors
- **High-Speed Processing:** Maintain high throughput with 3X faster* image acquisition and tool processing
- **Stable Lighting and Detection:** Get more consistent results with uniform illumination that reduces shadows and glare to provide clearer images
- **Fully Embedded Solution:** Experience easy integration and simplified operation with a compact, space-saving design that requires no PC

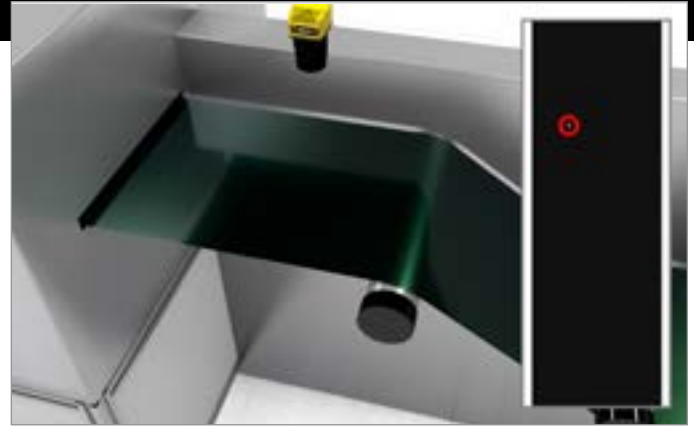


*Compared to previous generation system

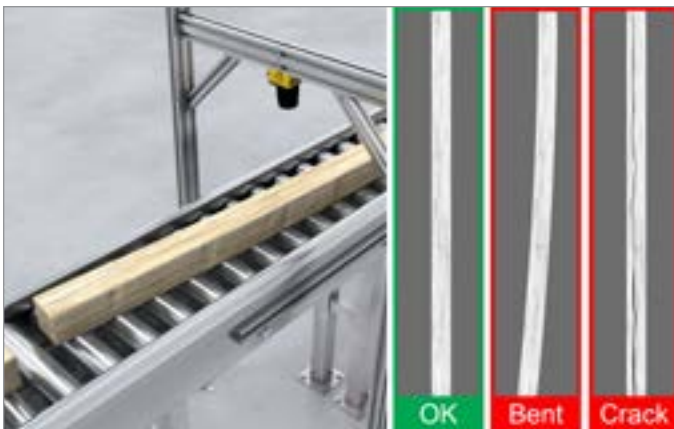
Application examples



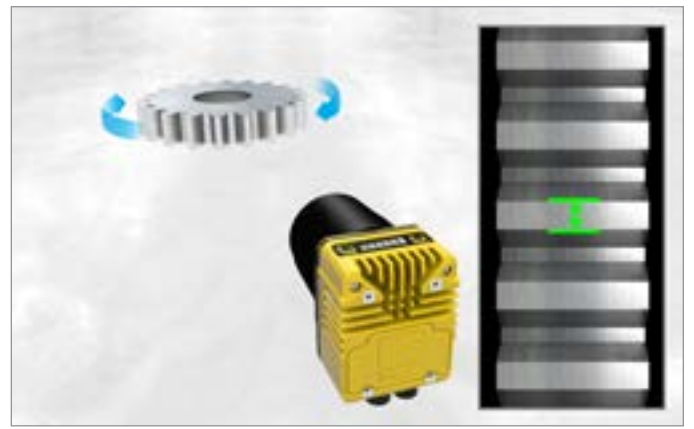
Optical character recognition (OCR): Extract and read text, such as lot codes and expiry dates, from rotating or curved surfaces for accurate product tracking and compliance.



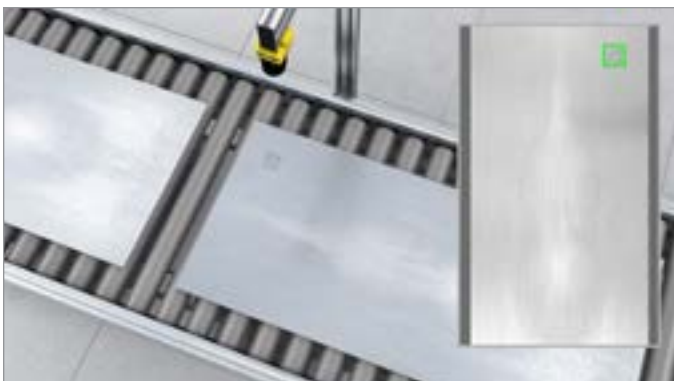
Defect detection: Identify coating voids on fast-moving, continuous materials, ensuring high-quality standards for printed media and other substrates.



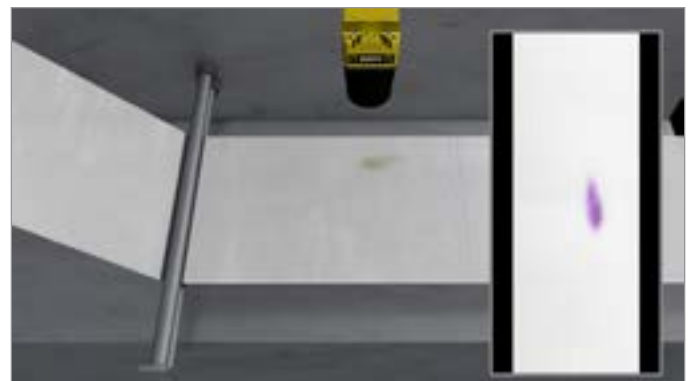
Inspection of large parts: Distinguish between good and non-conforming material on parts that are too large to be imaged with an area scan camera.



Measurement: Unwrap and measure circular or curved parts, ensuring precise dimensions for proper functionality and fit.



Barcode reading: Accurately decode barcodes on large parts for reliable traceability throughout production.



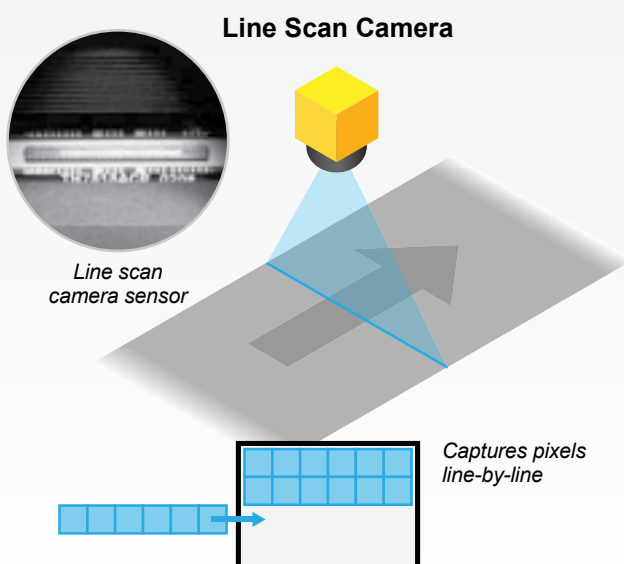
Continuous web inspection: Segment spot defects on continuous web materials to find and correct quality issues during the manufacturing process.

Line scan vs. area scan technology

Line scan

Builds the image line-by-line as the object moves past the sensor, ideal for inspecting fast- or continuously-moving objects

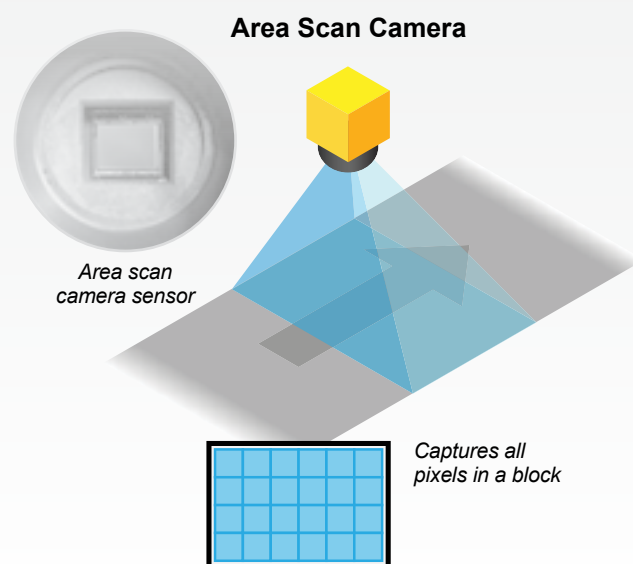
- **Use case:** Inspecting continuous materials (e.g. webs, textiles), cylindrical objects, complex surfaces, and large parts



Area scan

Captures the full image in a single snapshot, ideal for inspecting static or moderately moving objects

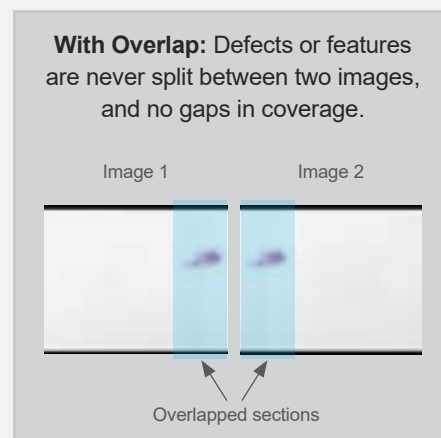
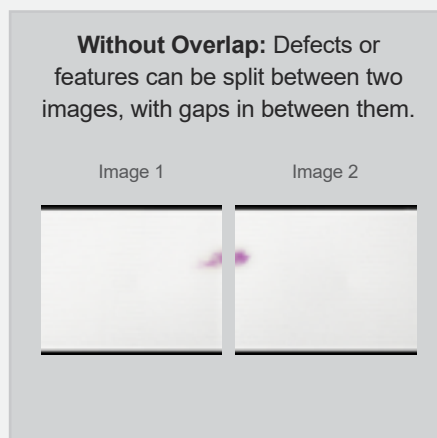
- **Use case:** Inspecting parts on a production line where items are stationary for short periods



Elevate quality control with image overlap technology

The In-Sight 3800 Line Scan captures overlapping sections of objects during inspections for complete coverage and more detailed images.

- **Improved Accuracy:** Overlapping images ensure every part of the object is inspected, minimizing missed defects.
- **Seamless Inspection:** Ideal for high-speed production lines, ensuring no areas are skipped due to fast movement.



Complete vision toolset solves tasks of any complexity

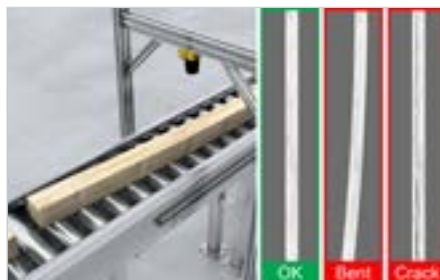
The In-Sight 3800 Line Scan integrates AI and rule-based tools into a single vision system, making it flexible enough to handle a wide range of error-proofing applications. Use the tools individually for simple tasks or combine them to tackle more complex automation challenges.

AI tools

The In-Sight 3800 Line Scan uses AI-powered edge learning tools to process images directly on device and deliver accurate results in real time. With example-based training and no experience needed, these tools offer high ease of use and fast deployment.



Segmentation: Extract defects, regions, and objects from complex parts and backgrounds.



Classification: Detect and sort parts based on multiple features or characteristics.



Optical character recognition (OCR): Read characters on reflective, low-contrast, and non-flat surfaces, including multi-line text.

Rule-based vision tools

The In-Sight 3800 Line Scan is also embedded with an extensive library of industry-proven traditional vision tools and algorithms including: Measure Distance, Pixel Count, Count Patterns, Math and Logic Tools, and more.



Spreadsheet environment facilitates deployment of advanced applications

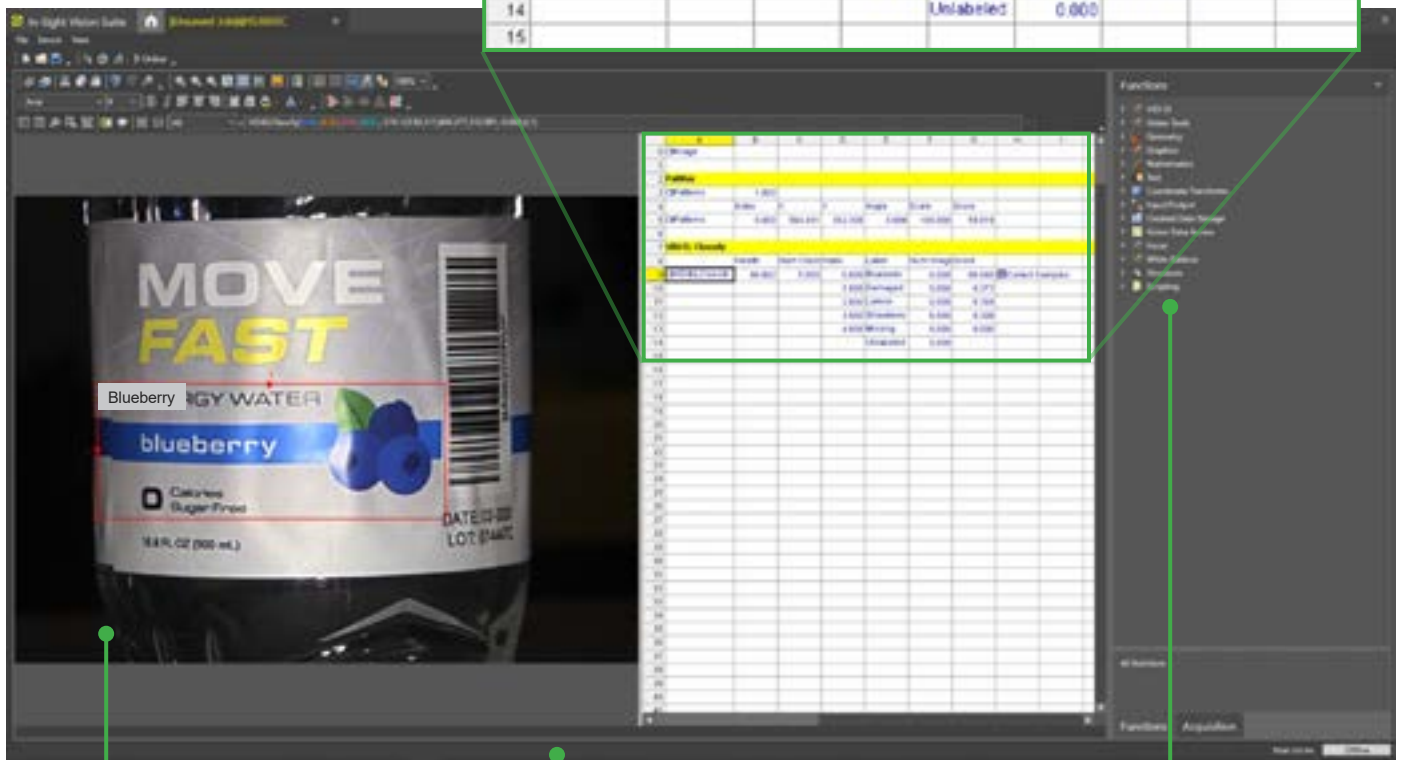
The In-Sight spreadsheet interface allows you to quickly set up and run jobs without the need for programming. This robust development environment provides you with the flexibility to make critical adjustments to job parameters, so you can adapt your applications as your requirements change.

Spreadsheet guides users through advanced applications

The In-Sight spreadsheet interface allows you to quickly set up and run jobs without the need for programming. This robust development environment provides you with the flexibility to make critical adjustments to job parameters, so you can adapt your applications as your requirements change.

Powerful spreadsheet interface allows users to solve complex applications

	A	B	C	D	E	F	G	H	I
0	Image								
1									
2	PatMax								
3	LPatMax	1.000							
4		Index	X	Y	Angle	Scale	Score		
5	OPatMax	0.000	564.451	342.308	0.059	100.000	59.819		
6									
7	VIDE L Classify								
8		Health	Num Class	Index	Label	Num Image	Score		
9	VIDE L Classify	99.892	5.000	0.000	Blueberry	6.000	99.949	<input checked="" type="checkbox"/> Collect Samples	
10					1.000 Damaged	5.000	0.373		
11					2.000 Lemon	6.000	0.369		
12					3.000 Strawberry	6.000	0.309		
13					4.000 Missing	6.000	0.000		
14					Unlabeled	6.000	0.000		
15									



Easily review and recall files with image playback

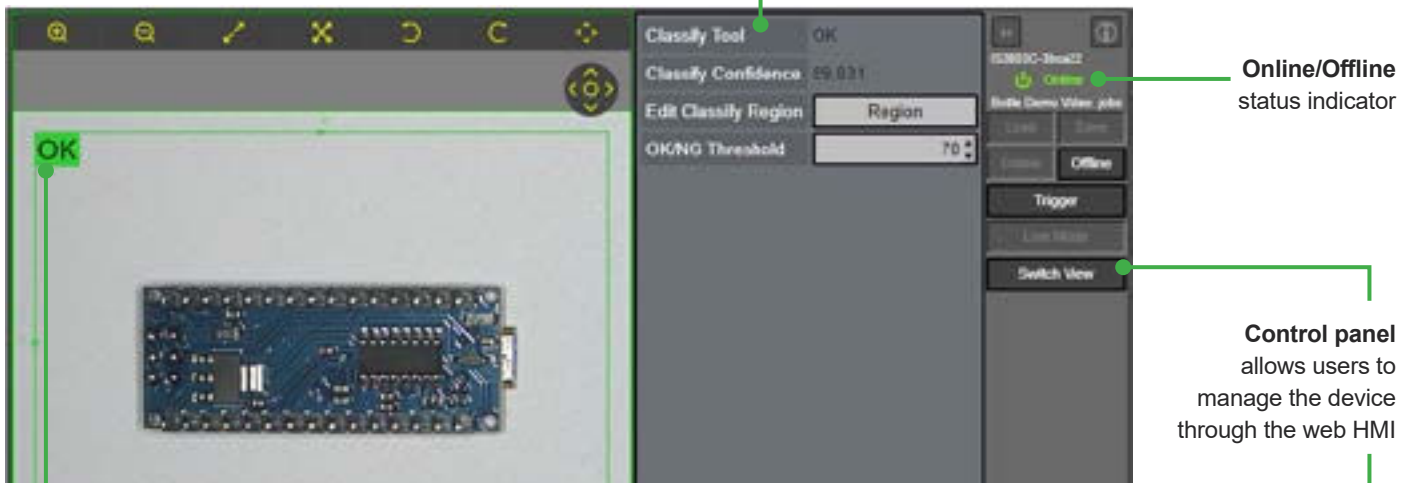
Full I/O and communications function set streamlines factory integration

Full suite of AI- and rule-based vision tools

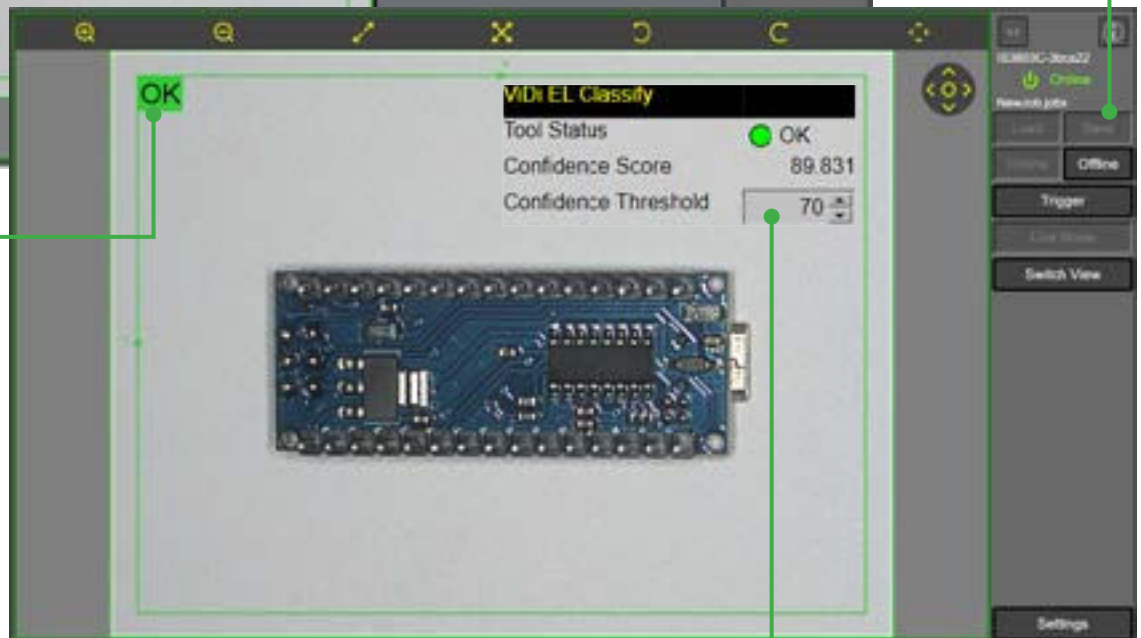
Web-based HMI offers real-time application testing and optimization

The In-Sight 3800 Line Scan provides access to a web-based human-machine interface (HMI) that enables runtime visualization. From the HMI, users can view inspection results and modify setup parameters to optimize their application.

EasyView displays tags from jobs in a simplified format



Overlay graphics clearly display application output



CustomView shows advanced settings from the spreadsheet

Full-featured vision system solves wide range of applications

The In-Sight 3800 is engineered with the entire suite of innovative Cognex vision tools and convenient features that deliver fast, reliable automation.



In-Sight 3800 Line Scan Series Specifications


Image Sensor	1K Mode	2K Mode	4K Mode
Bit Depth	8-bit monochrome	8-bit monochrome	8-bit monochrome
Line Rate (Maximum, Full Resolution)	87 kHz (11.5 µs per line)	169 kHz (5.9 µs per line)	84 kHz (11.9 µs per line)
Sensor Type	1" CMOS	1" CMOS	1" CMOS
Sensor Properties	14 µm x 14 µm square pixels	7 µm x 7 µm square pixels	3.45 x 3.45 µm square pixels
Maximum Image Resolution (pixels)	1024 x 16376 (16 MP)	2048 x 16376 (32 MP)	4096 x 16376 (64MP)
Electronic Shutter Speed	0.1us to 1,000,000us	0.1us to 1,000,000us	0.1us to 1,000,000us

Vision System

Memory	4 GB
Lens Type	C-Mount only
Trigger	1 opto-isolated, acquisition trigger input
Discrete Inputs	1 opto-isolated, acquisition trigger input 2 dedicated encoder line inputs for quadrature support 1 additional general-purpose input
Discrete Outputs	Up to 2 high-speed outputs
Encoder Specifications	10 – 30 VDC (500 kHz max)
Status LEDs	Pass/Fail LED and Indicator Ring, Network LED and Error LED
Job/Program Memory	7.2 GB non-volatile flash memory; unlimited storage via remote network device
Image Processing Memory	1 GB
Network Communication	2 Ethernet ports, 10/100/1000 BaseT with auto MDIX. IEEE 802.3 TCP/IP Protocol Supports DHCP, static, and link-local IP address configuration
Communication Protocols	TCP/IP, PROFINET, EtherNet/IP, SLMP, ModbusTCP, (S)FTP, RS-232C, IEEE 1588 (CIPSync)
Power Consumption	24 V DC ± 10%, 2.0 A maximum
Material	Die-cast aluminum and zinc housing
Finish	Painted
Mounting	Four M3 threaded mounting holes. See Accessories for supported mounts Pattern: 38.5 x 8.5 mm (1.52 x 2.60 in)
Weight	In-Sight 3800 with no accessories attached: 570 g (20.10 oz) With 45 mm plastic C-Mount cover (COV-380-CMNT-45): 625 g (22.0 oz.) - no lens included With 60 mm plastic C-Mount cover (COV-380-CMNT-60): 635 g (22.4 oz.) - no lens included With 75 mm plastic C-Mount cover (COV-380-CMNT-75): 650 g (22.9 oz.) - no lens included
Ambient/Environment Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-20° C to 80° C (-4° F to 176° F)
Humidity	<95% non-condensing
Protection	IP67 with all cables properly attached (or the provided connector plug installed) and the IP67-rated cover
Shock (Packaging)	IEC 60068-2-27: 18 shocks (3 shocks in each polarity in each (X, Y, Z) axis) 80 Gs (800 m/s ² at 11 ms, half-sinusoidal) with cables or cable plugs and a 150 gram or lighter lens attached.
Vibration (Shipping and Storage)	IEC 60068-2-6: vibration test in each of the three main axis for 2 hours at 10 Gs (10 to 500 Hz at 100 m/s ² / 15 mm) with cables or cable plugs and a 150 gram or lighter lens attached.
Regulations/Conformity	CE, FCC, KCC, TÜV SÜD NRTL, EU RoHS, China RoHS

Components and accessories


In-Sight 3800 Line Scan

	Product ID	Resolution	Mono/Color	Performance	Light	Lens	Cover	Toolset
	IS3802LX-00001-SR	2K	Mono	Max	None	None	None	EB/SS, rule-based
	IS3802LX-00001-SA	2K	Mono	Max	None	None	None	EB/SS, all tools
	IS3804LX-00001-SR	4K	Mono	Max	None	None	None	EB/SS, rule-based
	IS3804LX-00001-SA	4K	Mono	Max	None	None	None	EB/SS, all tools




Lenses

	Product ID	Description
	ML-U0618SR-18C	6 mm Moritex SR series lens
	ML-U1217SR-18C	12 mm Moritex SR series lens
	ML-U1615SR-18C	16 mm Moritex SR series lens
	ML-U2515SR-18C	25 mm Moritex SR series lens
	ML-U3518SR-18C	35 mm Moritex SR series lens
	ML-U5022SR-18C	50 mm Moritex SR series lens



Lens Covers

	Product ID	Description
	COV-380-CMNT-45	45 mm plastic lens cover
	COV-380-CMNT-60	60 mm plastic lens cover
	COV-380-CMNT-75	75 mm plastic lens cover
	COV-7000-CMNT-LGX	30 mm lens cover extender


Mounting Brackets

	Product ID	Description
	BKT-INS-01	Mounting bracket with M3, M4 and 1/4 - 20 mounting holes
	ISB-7000-7K	Converter mounting bracket with M3 socket head screws/wrench
	ISB-7000-5K	Converter mounting bracket with Phillips flat head M3 screws and M4 screws

Cables

	Product ID	Description
	CCB-84901-2001-XX	Ethernet cable, X-coded M12-8 to RJ-45 (2 m, 5 m, 10 m, 15 m, 30 m)
	CCB-84901-2RBT-XX	Ethernet cable, X-coded M12-8 to RJ-45 (2 m, 5 m, 10 m)
	CCB-PWRIO-XX	Breakout cable, M12-12 to flying lead (5 m, 10 m, 15 m)

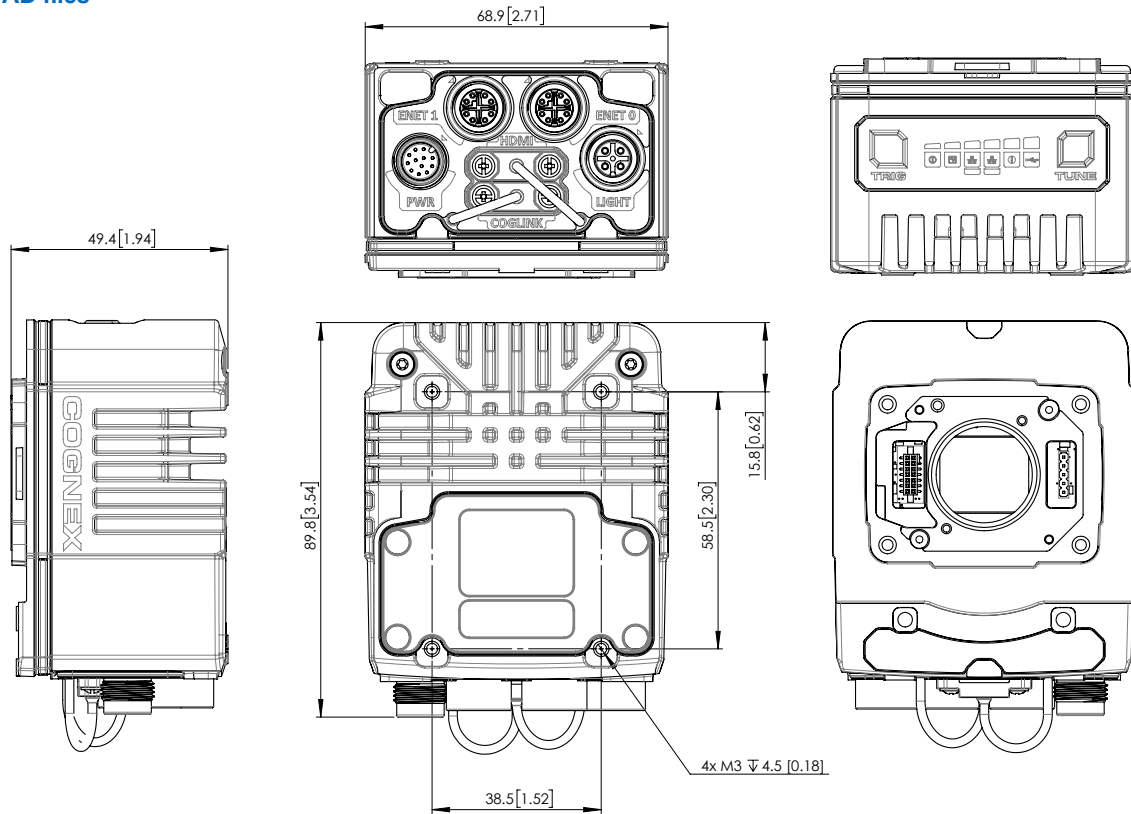
VisionView

	Product ID	Description
	VVW-P	VV Web HDMI Panel
	VVW-H-AU	CFKIT, VV Web HDMI with AU PS
	VVW-H-EU	CFKIT, VV Web HDMI with EU PS
	VVW-H-NOM	CFKIT, VV Web HDMI with NOM PS
	VVW-H-UK	CFKIT, VV Web HDMI with UK PS
	VVW-H-US	CFKIT, VV Web HDMI with US PS

Dimensions Units: mm, [in]

In-Sight 3800 base unit

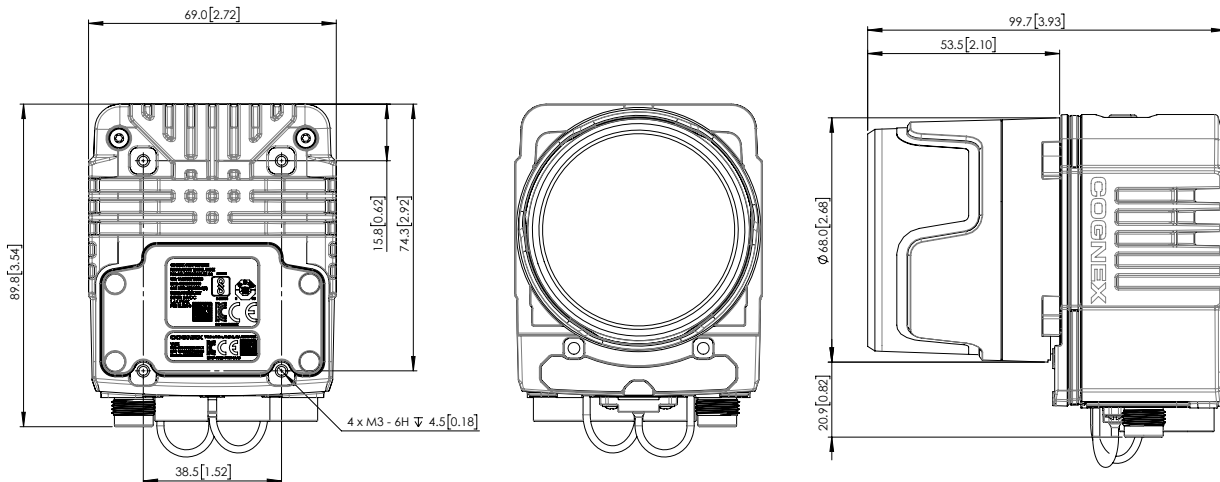
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In-Sight 3800 with C-mount

45 mm C-mount cover

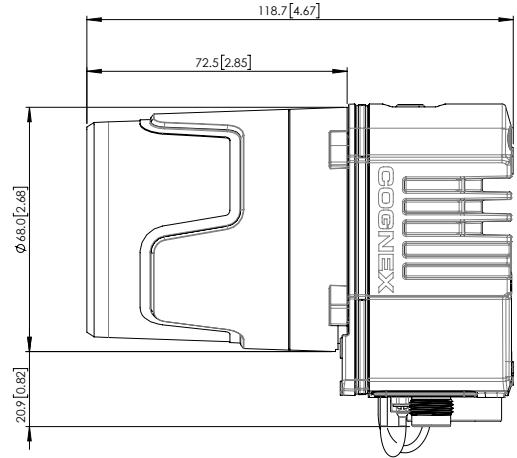
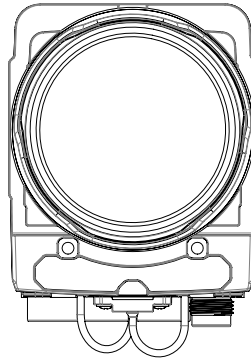
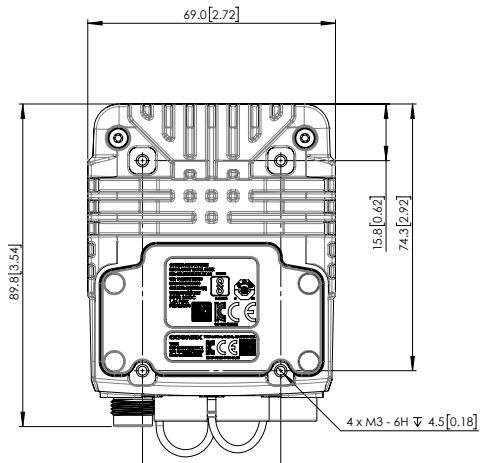
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In-Sight 3800 with C-mount

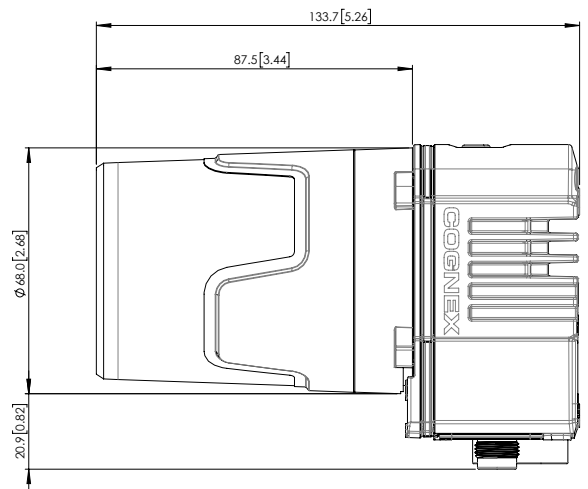
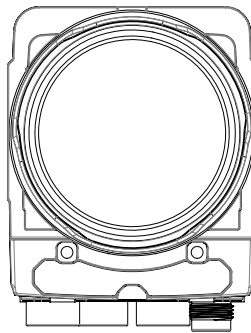
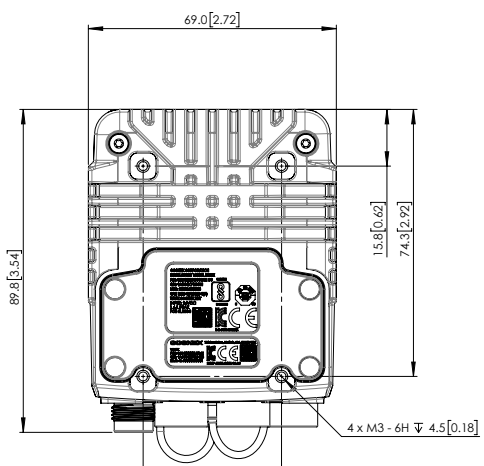
60 mm C-mount cover

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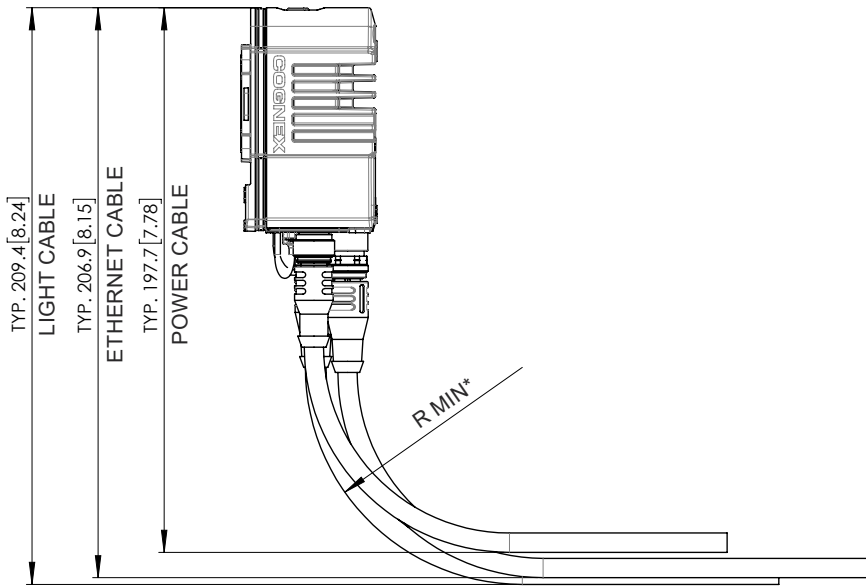


75 mm C-mount cover

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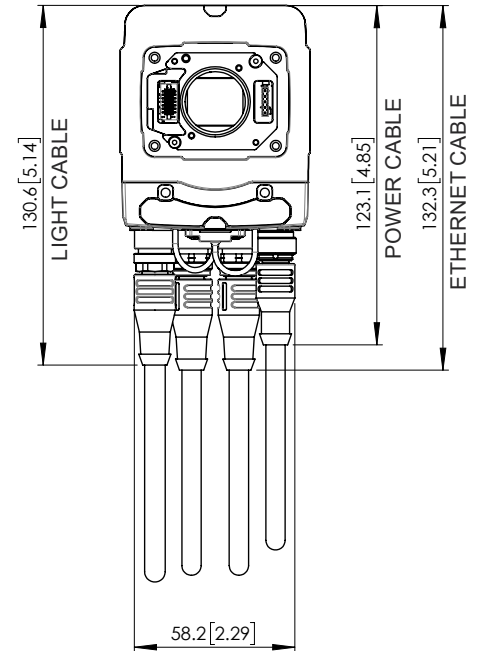


Cable bend radius



*R MIN = 10X CABLE DIAMETER

TYPICAL:
 POWER CABLE $\varnothing 7.1$ [0.28]
 ETHERNET CABLE $\varnothing 7.1$ [0.28]
 LIGHT CABLE $\varnothing 7.5$ [0.3]



COGNEX

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

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