Vision Made Simple

The power of deep learning without the complexity

IN-SIGHT 2800 SERIES

COGNEX

COGNEX

IN-SIGHT 2800 SERIES

**Automate error detection in minutes—
no programming experience required**

The In-Sight® 2800 vision system combines deep learning technology with traditional rule-based vision tools to solve a wide range of inspection applications. From simple presence/absence detection to complex categorization and sorting problems, In-Sight 2800 provides an easy to deploy solution for error-proofing tasks. Designed for factory automation, In-Sight 2800 enables manufacturers of all size to:
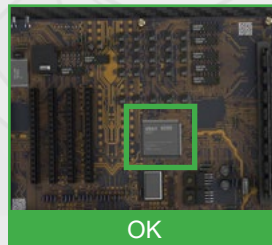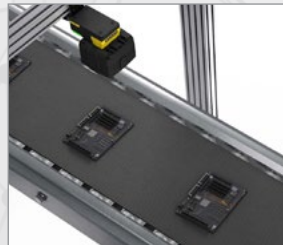
- Increase product quality
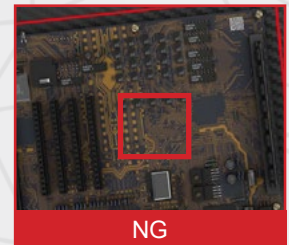- Maximize operational efficiency
- Streamline integration

Increase product quality

Catch small, subtle defects with highly accurate, deep learning-based error detection capable of solving OK/NG applications and classifying parts with variation based on multiple defect types or user-defined features.
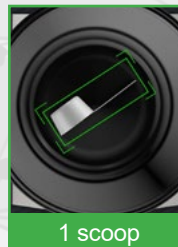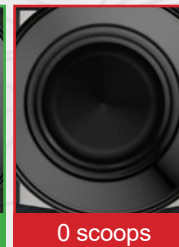
Deep learning and rule-based vision tools

LEARN MORE
PAGE 4

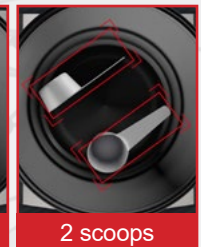### Multiple classification functionality

LEARN MORE
PAGE 4

OK/NG

OK

NG

Categorize types of defects

1 scoop

0 scoops

2 scoops

Categorize different part variations

Almond

Lavender

Lemon

Mint

Maximize operational efficiency

Leverage your existing workforce and keep your lines running with fast, intuitive job setup—no vision or deep learning expertise required.

Intuitive development environment
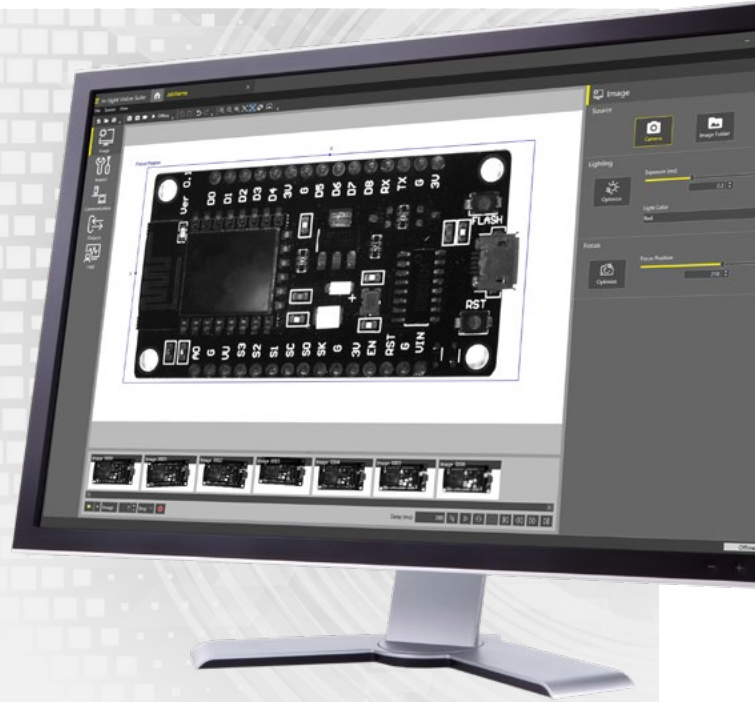
LEARN MORE
PAGE 7
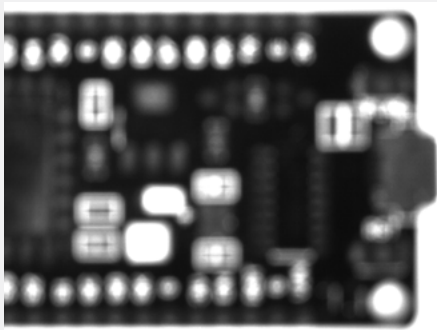
Step-by-step guidance

Setup Image → Inspect Part → Run HMI

2-click image setup
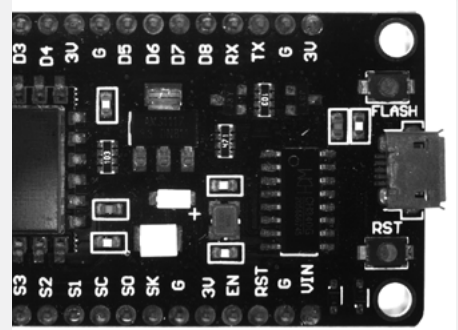
1 Optimize Exposure

2 Optimize Focus

Streamline integration

Modular solutions for integrated lights and lenses takes the guesswork out of image optimization. Identifying the correct combination of accessories for your application is only a few button clicks away.

Integrated multi-color lighting

LEARN MORE
PAGE 8

Compact, modular design

LEARN MORE
PAGE 9

Comprehensive vision toolset addresses tasks of varying complexity

Integrating rule-based and deep learning tools in a single vision system, the In-Sight 2800 solves a variety of error-proofing applications. Use the tools individually for simple jobs or chain them together to solve more complex logic sequences.

Deep learning tools

The In-Sight 2800 is embedded with powerful ViDi™ EL tools that leverage deep learning-based technology to learn "on the edge," in real time, delivering fast, accurate results.


Training

ViDi EL tools are trained in minutes, using as few as five to ten images per class with no coding required.

Gear 1 | Gear 2 | Gear 3 | Gear 2 | Gear 4

Confidence score

Get real-time, visual feedback on the accuracy of your results. The confidence score confirms whether the deep learning model correctly predicted the application output, leading to less manual intervention and more reliable inspections.

89%
Gear 1
Gear 2
Gear 3
Gear 4

97%
Gear 1
Gear 2
Gear 3
Gear 4
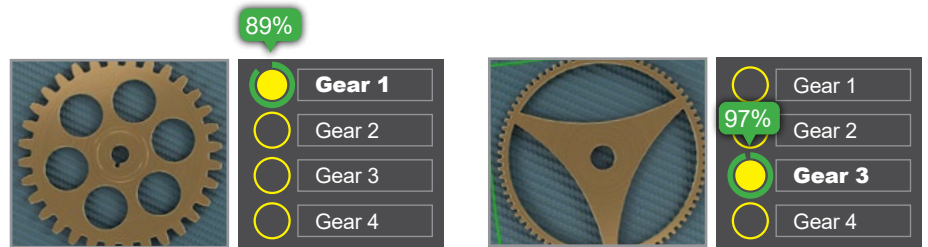
Multi-class functionality

Go beyond the standard OK/NG output with the ViDi EL Classifier tool. The tool identifies and sorts parts based on multiple features or characteristics. This enables users to classify defects into different categories and correctly identify parts with variation, allowing them to automate a wider range of tasks.


Gear 1 | Gear 2
Gear 3 | Gear 4
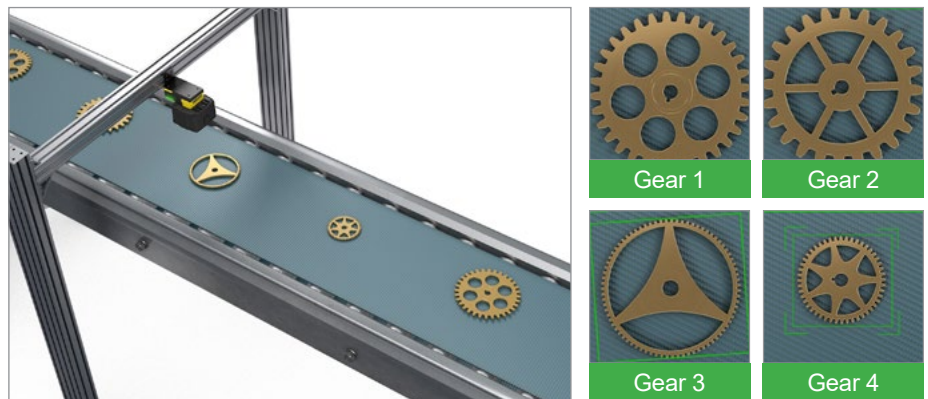
Rule-based vision tools

In-Sight 2800 is also equipped with an extensive library of industry-proven traditional vision tools and algorithms including: Measure Distance, Pixel Count, Count Patterns, Math and Logic Tools, and much more.

Multiple regions of interest functionality

Set up multiple regions of interest (ROIs) to inspect different sections of your image with a single trigger.
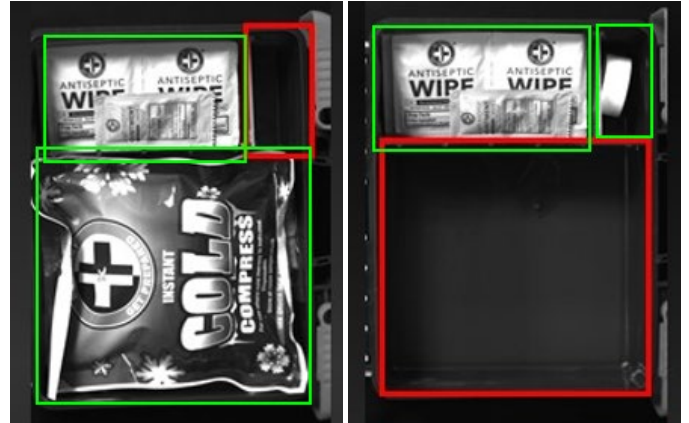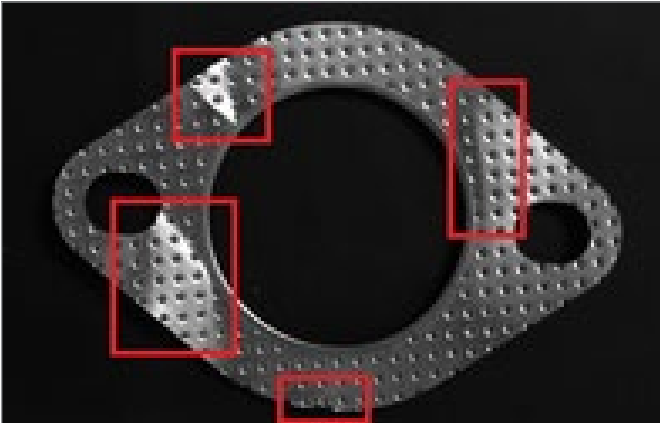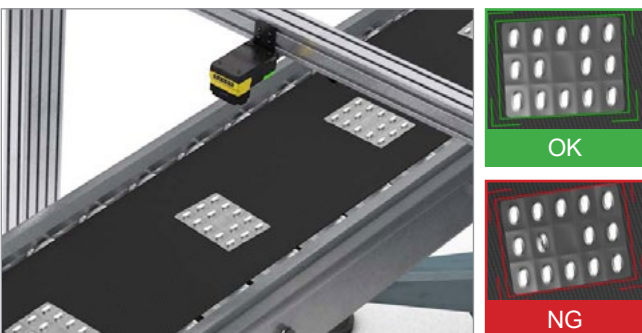

Key applications

Bottle seal check

OK

NG

Scoop presence in container

1 scoop

1 scoop

2 scoops

0 scoops

Blister pack check

OK

NG

PCB component check

OK

NG

Connector insertion check

OK

NG

Label defects

OK

Torn

Skewed
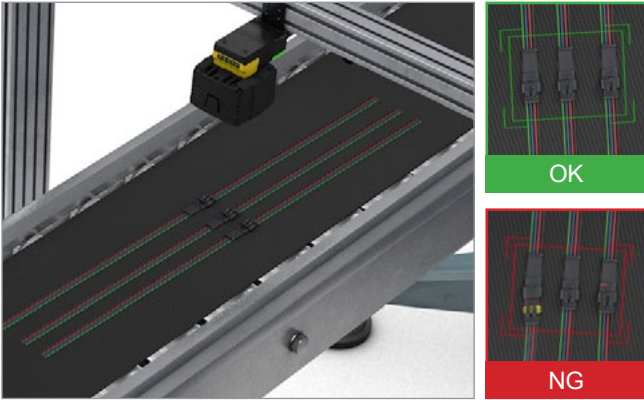
Air freshener quality check

OK

NG
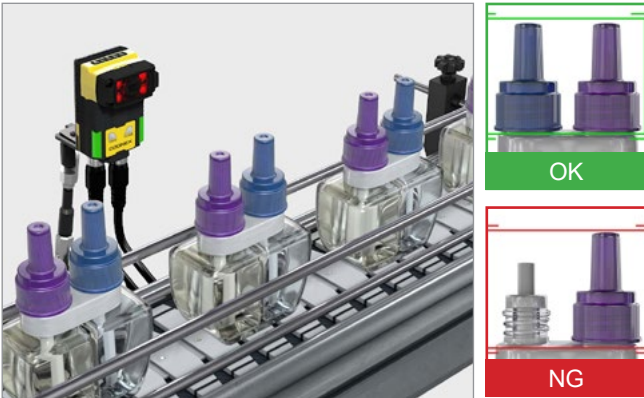
Gasket quality check

OK

NG
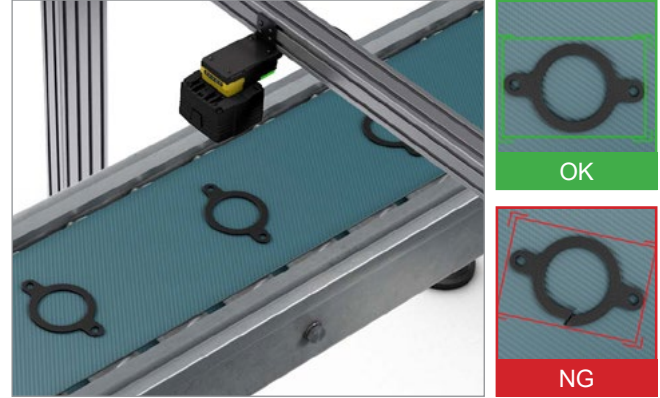
Soap scent classification

Almond

Lavender

Lemon

Mint

Bearing check

OK

NG
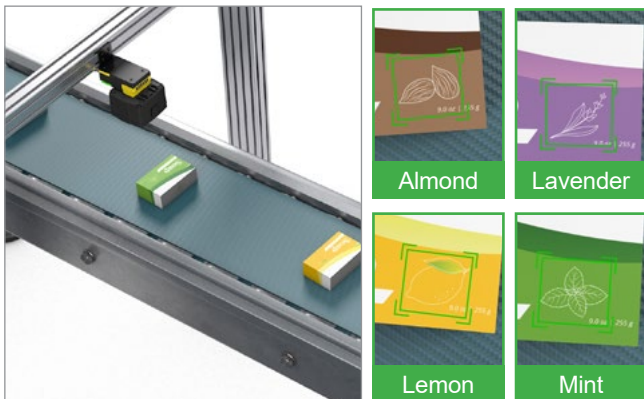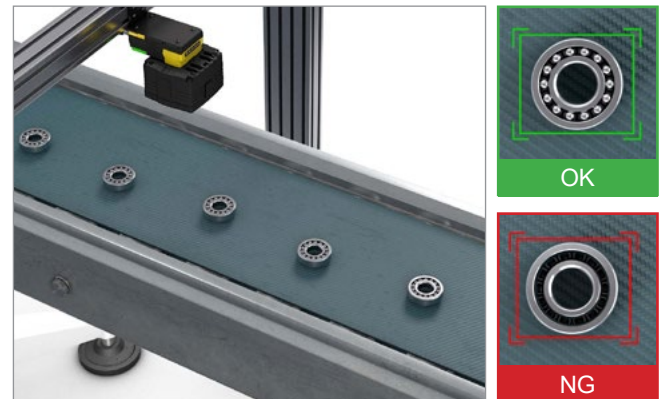
EasyBuilder development environment simplifies setup and delivers rapid turnaround

With its point-and-click programming, the EasyBuilder® interface within In-Sight Vision Suite is ideal for developing jobs, from simple to complex. The intuitive process guides developers step-by-step through setup—from image capture to the final result and beyond—allowing both new and experienced users to configure vision applications.

Easy **step-by-step** application setup

Image-centric **point-and-click** functionality allows users to quickly set up tools

Capture images live or upload existing images
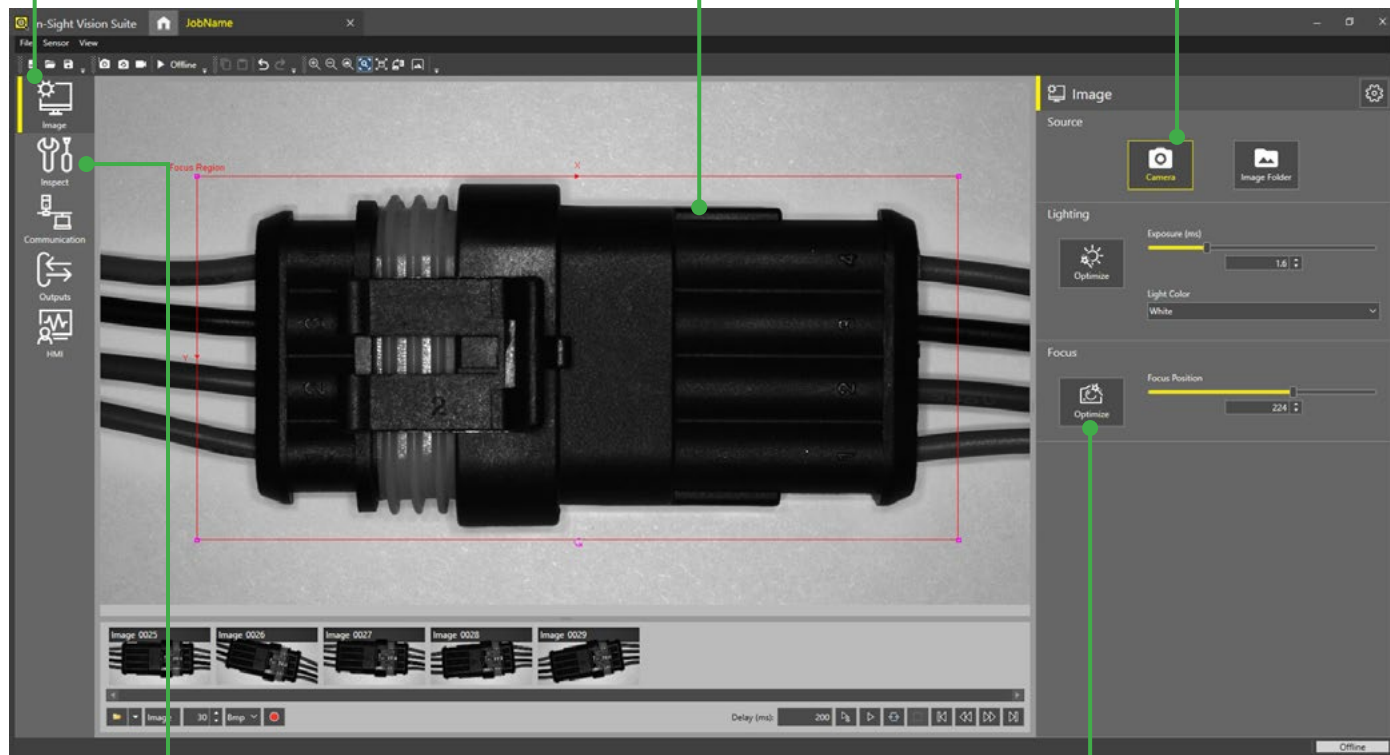
Comprehensive set of traditional rule-based vision tools and **innovative ViDi EL deep learning tools**

Fast, **2-click** image formation

1 Optimize Exposure

2 Optimize Focus

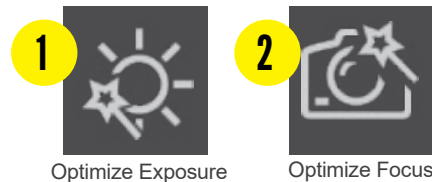# Full-featured vision system solves broad range of applications

The In-Sight 2800 is engineered with the entire suite of powerful Cognex vision tools and convenient features to automate applications easily and reliably.

1.6MP sensor offers greater detail in smaller parts or features and larger field of view coverage

Compact form factor with **straight or right-angle configuration**

Field-interchangeable optical accessories increase flexibility to solve variable applications

Multi-core processor enables fast acquisition

Indicator lights for operator feedback

Gigabit Ethernet delivers fast communication speeds and image offload

Powered by 24V

Powerful and flexible integrated lighting

Multi-color (RGBW) lighting option allows you to optimize image contrast for the application, regardless of operating conditions. Simply click a button in In-Sight Vision Suite to change the light color.
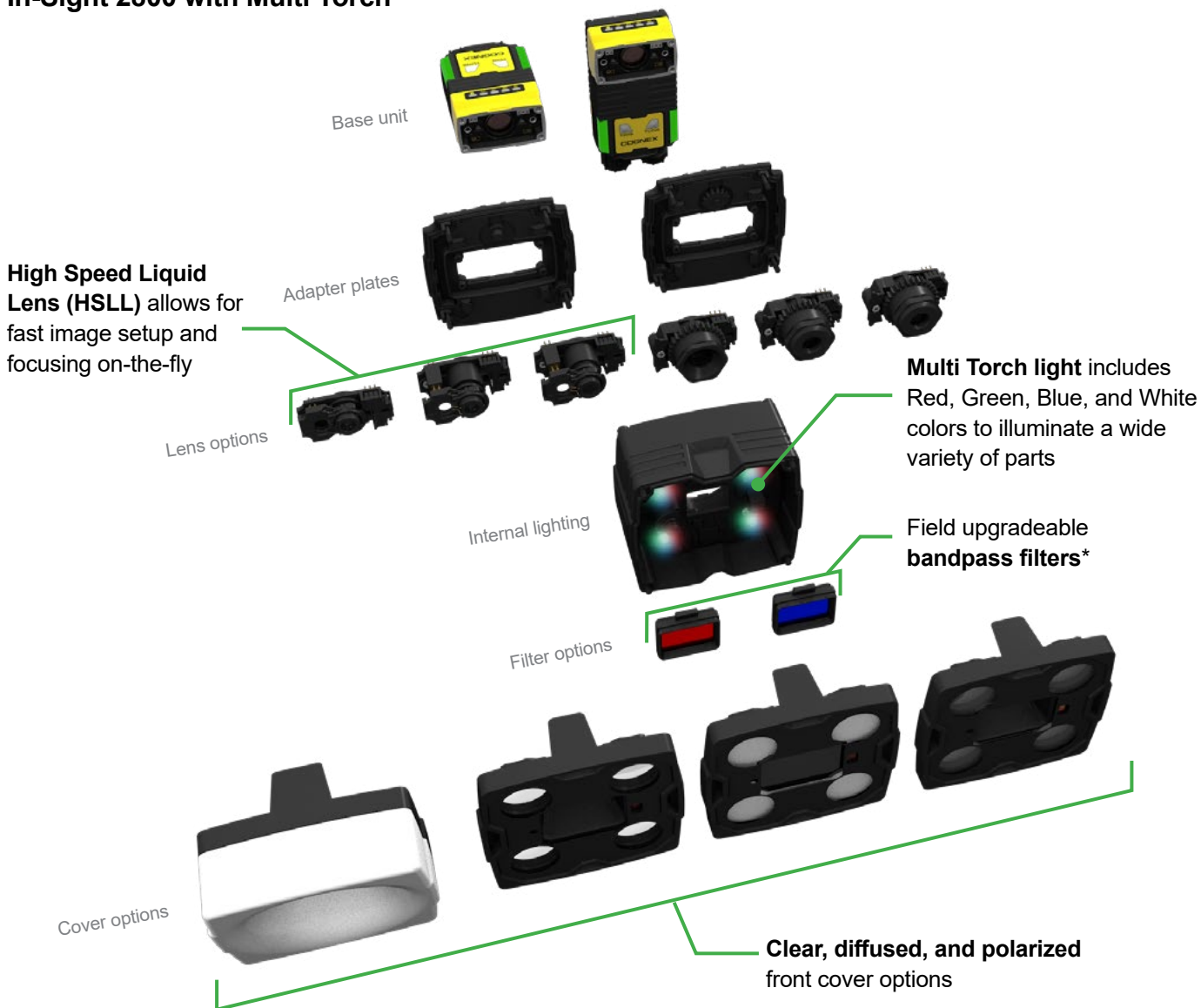
Actual part

Red light: Numbers are unclear

Blue light: Numbers are clear

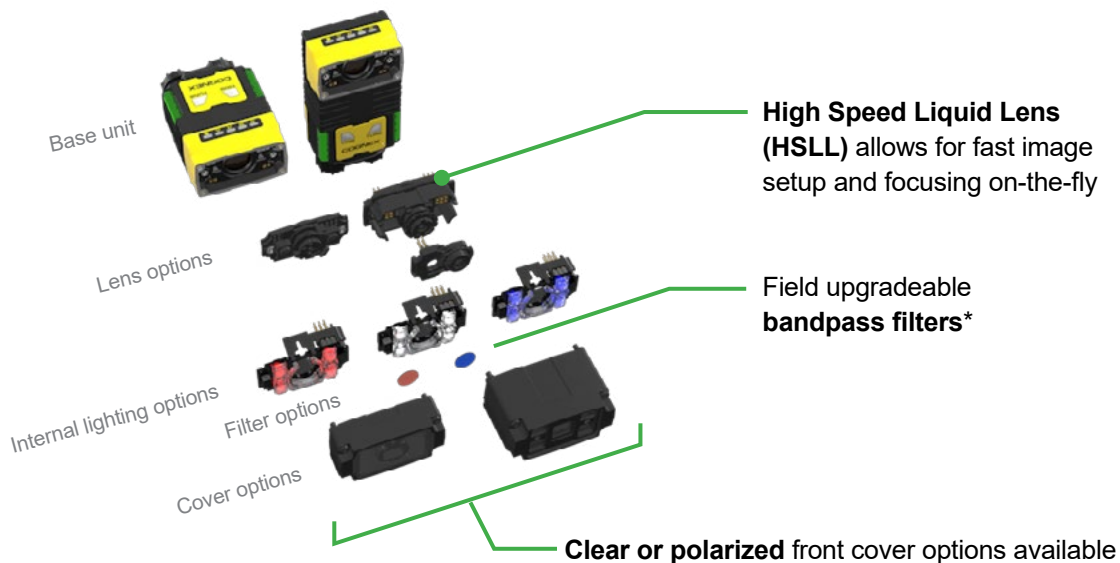## Modular, scalable architecture for current and future needs

The In-Sight 2800 series offers a wide variety of accessories and field-changeable components. This flexibility enables manufacturers to quickly adapt to new parts and keep up with changing demands, such as part changes, faster line speeds, and higher quality standards.

In-Sight 2800 with Multi Torch

Base unit

High Speed Liquid Lens (HSLL) allows for fast image setup and focusing on-the-fly

Adapter plates

Lens options

Multi Torch light includes Red, Green, Blue, and White colors to illuminate a wide variety of parts

Internal lighting

Field upgradeable **bandpass filters***

Filter options

Cover options

Clear, diffused, and polarized front cover options

*Sold separately

In-Sight 2800 Mini

Base unit

Lens options

Internal lighting options

Filter options

Cover options

High Speed Liquid Lens (HSLL) allows for fast image setup and focusing on-the-fly

Field upgradeable **bandpass filters***

Clear or polarized front cover options available

*Sold separately

Build YOUR vision

Select from different combinations of lenses, lighting, and covers to build your custom solution.

IN-SIGHT 2800

COGNEX

RESOLUTION	1.6 MP	>
ORIENTATION	Straight, Color Configuration	>
LENS	Multi Torch 12MM HSLL	>
ILLUMINATION	Multi Torch RGBW	>
FRONT WINDOW	Multi Torch clear	>
USER INTERFACE	EasyBuilder	>
TOOLSET	VIDi EL Classifier Toolset	>

START OVER   GET BILL OF MATERIALS

configurator.cognex.com/en/insight2800

IN-SIGHT 2800 SPECIFICATIONS

Image Sensor	1 /2.8" CMOS monochrome and color
Image Sensor Properties	6.17 mm diagonal, 2.8 µm square pixels
Image Resolution Options	SVGA[1] (720x540), 1.6 MP (1440x1080)
Electronic Shutter Speed	Min. exposure: 29 µs Max. exposure: Up to 10 ms (internal illumination) / Up to 200 ms (external illumination)
Acquisition	Up to 45 Hz
Lens Options	Multi Torch: 8 mm, 12 mm, 16 mm (High Speed Liquid Lens or manual focus lens) Mini: 6.2 mm or 16 mm High Speed Liquid Lens
Discrete Inputs	2 opto-isolated
Discrete Outputs	2 opto-isolated
Other I/O Points	2 user configurable as inputs or outputs
Status Outputs	5 status LEDs, audible beeper
Lighting	Multi Torch: High-Powered Multi-Color 4 LED ring light (red, green, blue, white) Mini: 4 LED small form factor light for 6.2mm lens (red, blue, white, IR options) Mini HPIL: 4 LED small form factor high-powered light for 16 mm lens (red, white options)
Communications	Ethernet interface
Protocols	TCP/IP, PROFINET, EtherNet/IP™, SLMP, OPC/UA, FTP
Power	24V +/- 10%
Power Consumption	≤7.5W
Materials	ABS, acrylic, aluminum alloy, NBR, PC, PET, PMMA, silicone, silicone rubber, stainless steel, TVP, zinc alloy
Weight	6.2 mm: 141 g; 16 mm: 169 g; Multi Torch: 290 g; Right angle configuration adds 50 g
Operating Temperature	0–40 °C (32–104 °F)
Storage Temperature	-10–60 °C (14–140 °F)
Operating and Storage Humidity	<95% non-condensing
Protection	IP67
RoHS Certified	Yes
Approvals	EU CE, US FCC, TUV CB NRTL IEC 61010
Software	In-Sight Vision Suite

[1] SVGA options are monochrome only.
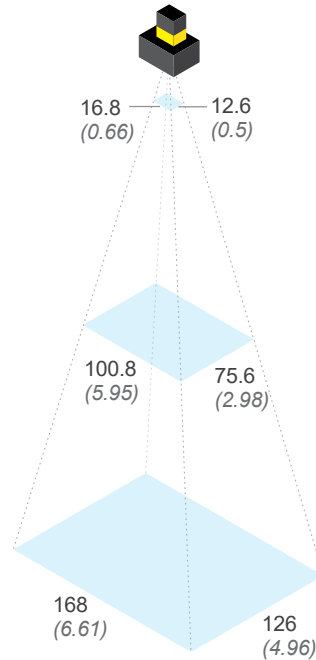
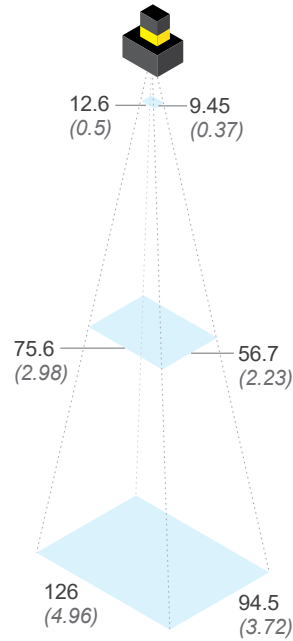# Field of view diagrams

Working distances
Units: mm *(in)*

Multi Torch with 12 mm lens

Minimum
50 *(1.97)*

16.8 *(0.66)* — 12.6 *(0.5)*

Midpoint
300 *(11.8)*

100.8 *(5.95)* — 75.6 *(2.98)*

Maximum
500 *(19.69)*

168 *(6.61)* — 126 *(4.96)*

Multi Torch with 16 mm lens

12.6 *(0.5)* — 9.45 *(0.37)*

75.6 *(2.98)* — 56.7 *(2.23)*

126 *(4.96)* — 94.5 *(3.72)*

Working distances
Units: mm *(in)*

Mini with 6.2 mm lens

Minimum
50 *(1.97)*

65 *(2.56)* — 48.7 *(1.92)*

Midpoint
300 *(11.8)*

195.1 *(7.68)* — 146.32 *(5.76)*

Maximum
500 *(19.69)*

325 *(12.8)* — 243.8 *(9.6)*
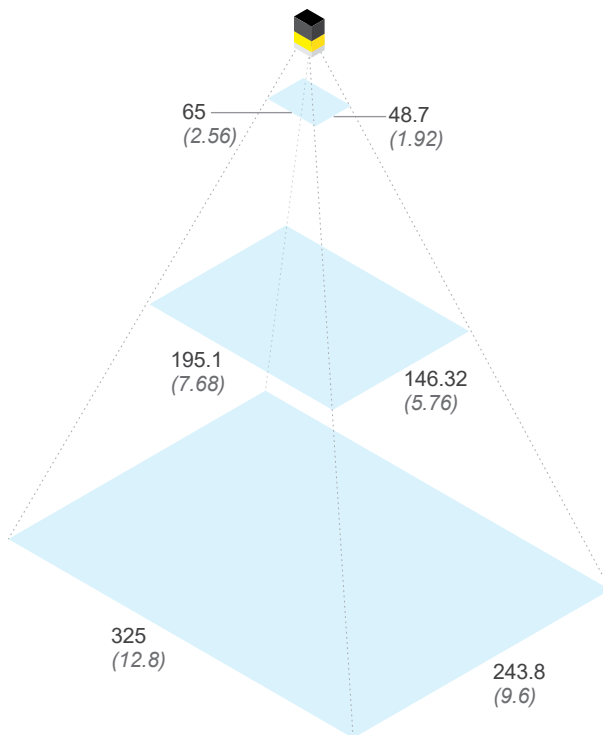
Mini with HPIL and 16 mm lens

Minimum
100 *(3.94)*

25.2 *(1)* — 18.9 *(0.74)*

Midpoint
300 *(11.8)*

75.6 *(2.98)* — 56.7 *(2.23)*

Maximum
500 *(19.69)*

126 *(4.96)* — 94.5 *(3.72)*
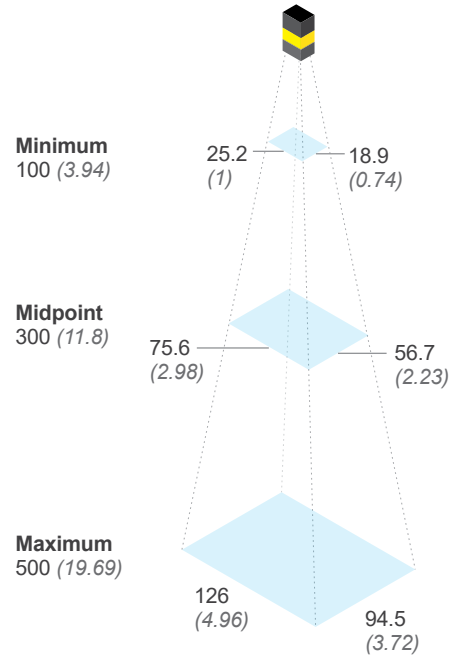
Focus distances

Minimum	Maximum
50 mm *(1.97)*	2000 mm* *(78.74)*

*Applications with working distances beyond 500 mm may result in an in-focus image but light uniformity/intensity will be significantly lower. External lighting is recommended for these scenarios.

Components and accessories

Required

POWER AND I/O CABLES

	Product ID	Length	Description
	CCB-PWRIO-05	5M	M12-12 to flying lead, straight
	CCB-PWRIO-10	10M	
	CCB-PWRIO-15	15M	
	CCB-PWRIO-05R	5M	M12-12 to flying lead, right-angled
	CCB-PWRIO-10R	10M	
	CCB-PWRIO-15R	15M	

MOUNTING BRACKETS

	Product ID	Description
	DM100-UBRK-000	Universal mounting bracket
	DM100-PIVOTM-01	Pivot mounting bracket
	280-BKT-ADAPT	Flat surface mounting plate adapter for Multi Torch configuration

ETHERNET CABLES

	Product ID	Length	Description
	CCB-84901-2001-02	2M	X-coded M12-8 to RJ-45, straight
	CCB-84901-2001-05	5M	
	CCB-84901-2001-10	10M	
	CCB-84901-2001-15	15M	
	CCB-84901-2001-30	30M	
	CCB-84901-2002-02	2M	X-coded M12-8 to RJ-45, right-angled
	CCB-84901-2002-05	5M	
	CCB-84901-2002-10	10M	
	CCB-84901-2RBT-02	2M	Robotic X-coded M12-8 to RJ-45, straight
	CCB-84901-2RBT-05	5M	
	CCB-84901-2RBT-10	10M	
	CCB-M12X8MS-XCAC	0.5M	X-coded to A-coded Ethernet cable adapter

Optional

Multi Torch Accessories

BANDPASS FILTERS

	Product ID	Description
	280-TORCH-BP450	Blue bandpass filter (450 nm)
	280-TORCH-BP635	Red bandpass filter (635 nm)

FRONT COVERS*

	Product ID	Description
	280-TORCH-COVPOL	Multi Torch cross polarized cover
	280-TORCH-COVCLR	Multi Torch clear cover
	280-TORCH-COVDIF	Multi Torch diffused cover
	280-TORCH-DOME	Multi Torch dome attachment

Mini Accessories

BANDPASS FILTERS

	Product ID	Description
	DM150-BP470	Blue bandpass filter (6.2 mm lens only)
	DM150-BP635	Red bandpass filter (6.2 mm lens only)

FRONT COVERS*

	Product ID	Description
	DM280-CVR-62	Mini front cover (6.2 mm lens)—clear
	DM280-LENS-62CVR-F	Mini front cover (6.2 mm lens)—polarized
	DM260-LENS-16CVR	Mini HPIL front cover (16 mm lens)—clear
	DM260-LENS-16CVR-P	Mini HPIL front cover (16 mm lens)—half polarized
	DM260-LENS-16CVR-F	Mini HPIL front cover (16 mm lens)—fully polarized

*In-Sight 2800 comes with one front cover. Additional options or spare covers listed.

Dimensions

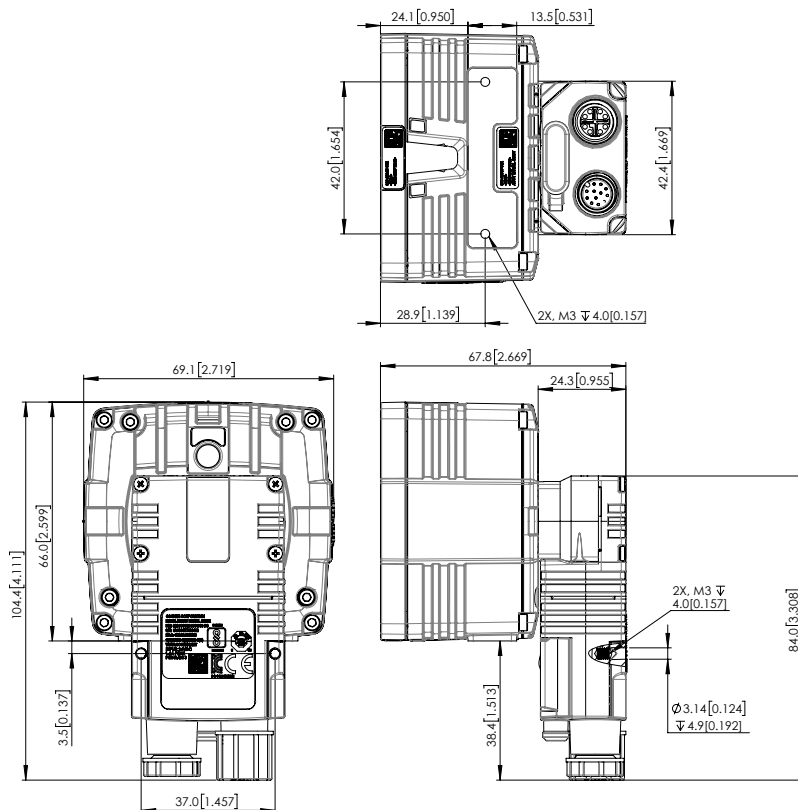## In-Sight 2800 with Multi Torch

Straight configuration
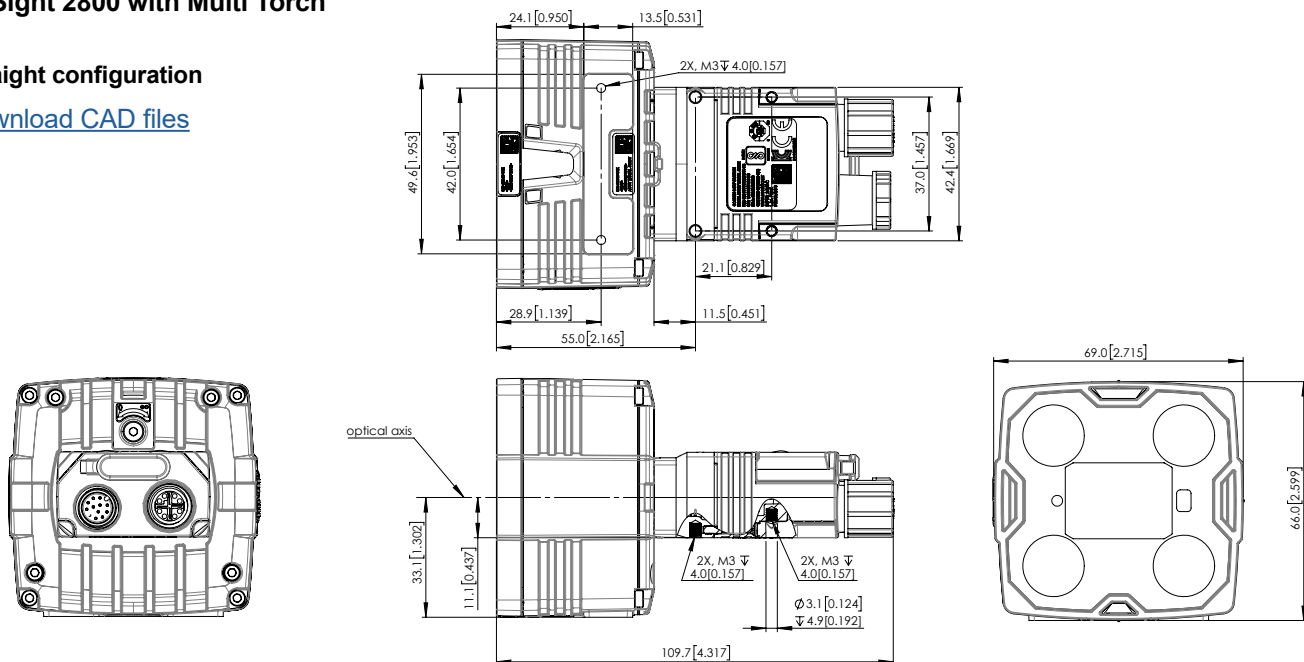
Download CAD files

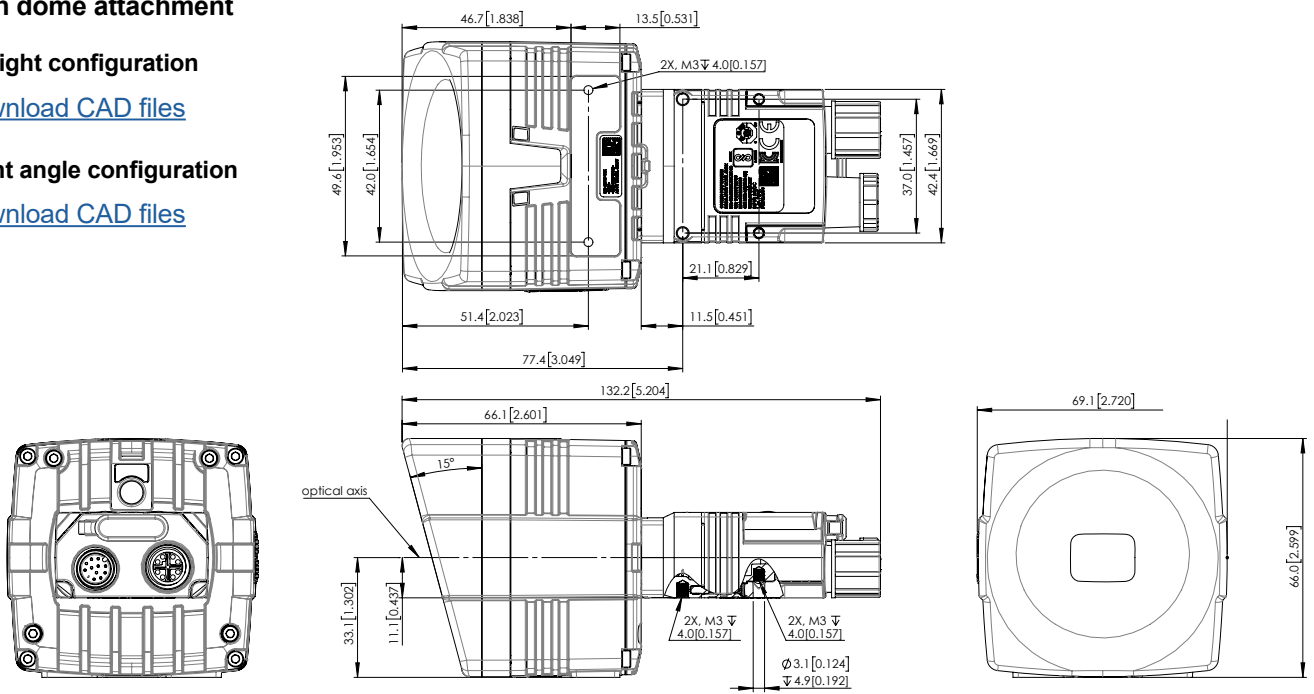**Right angle configuration**

Download CAD files

With dome attachment

Straight configuration

Download CAD files

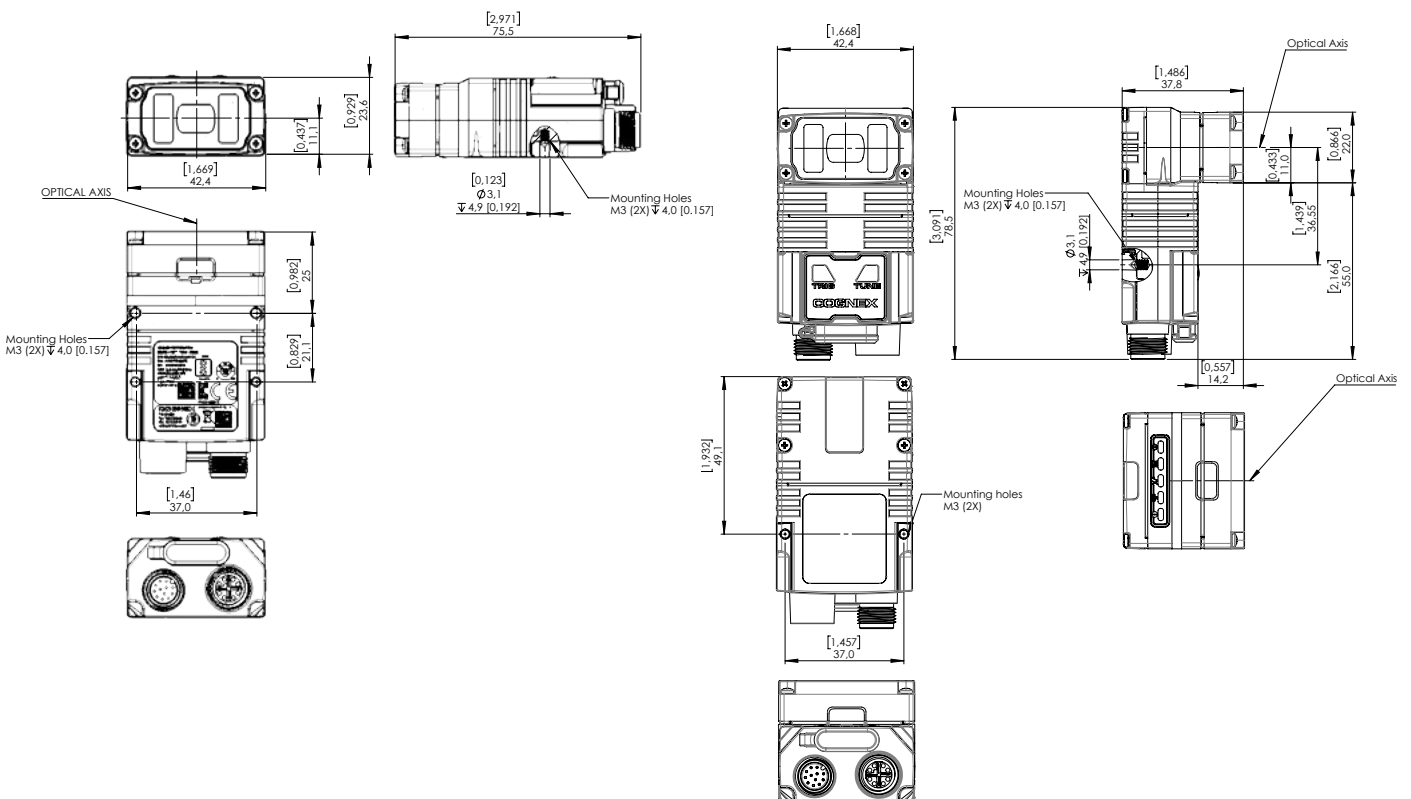**Right angle configuration**

Download CAD files

In-Sight 2800 Mini with 6.2 mm lens front cover

Straight configuration

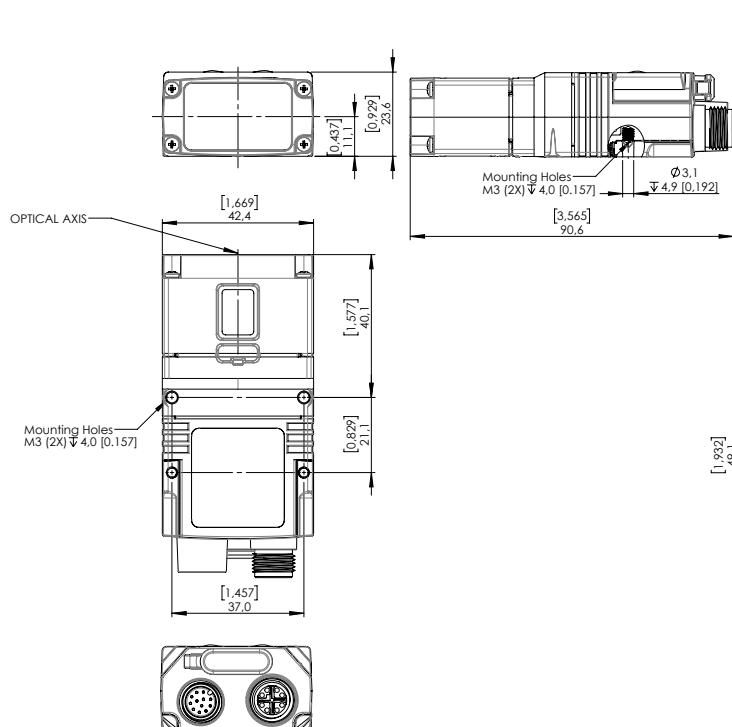Download CAD files

Right angle configuration

Download CAD files

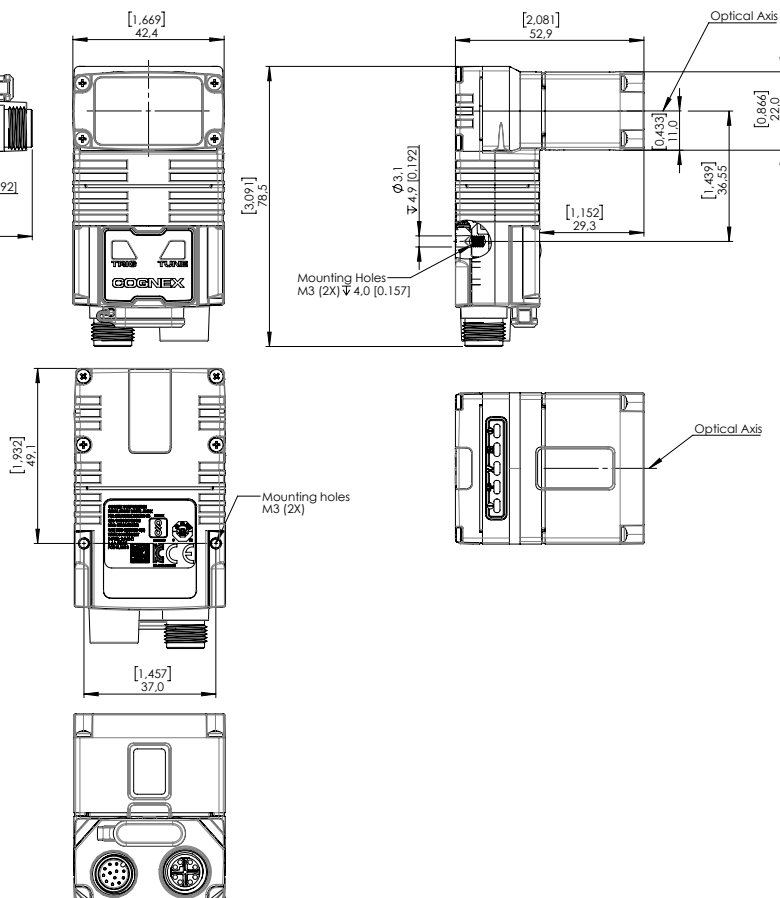## In-Sight 2800 Mini with 16 mm lens HPIL front cover

Straight configuration

[Download CAD files](#)

Right angle configuration

[Download CAD files](#)

For more information, including software downloads, application examples, and product collateral, please visit:

cognex.com/in-sight-2800

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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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