

# Vision Made Simple

The power of deep learning without the complexity

IN-SIGHT 2800 SERIES



**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:

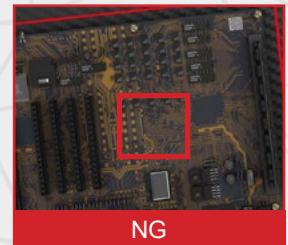
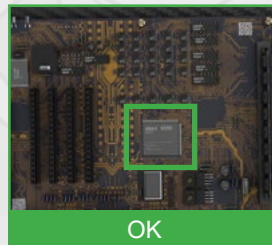
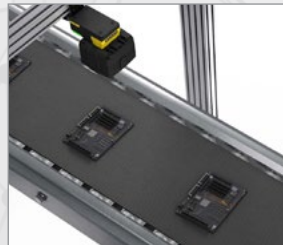
- Increase product quality
- Maximize operational efficiency
- Streamline integration



### 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.

#### OK/NG

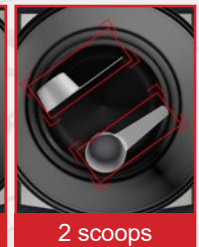
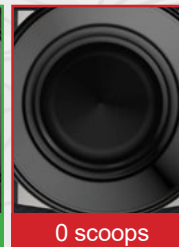
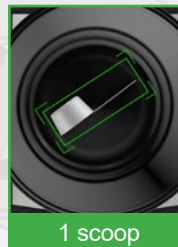


### Deep learning and rule-based vision tools



LEARN MORE  
PAGE 4

#### Categorize types of defects



### Multiple classification functionality



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PAGE 4

#### Categorize different part variations



## 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



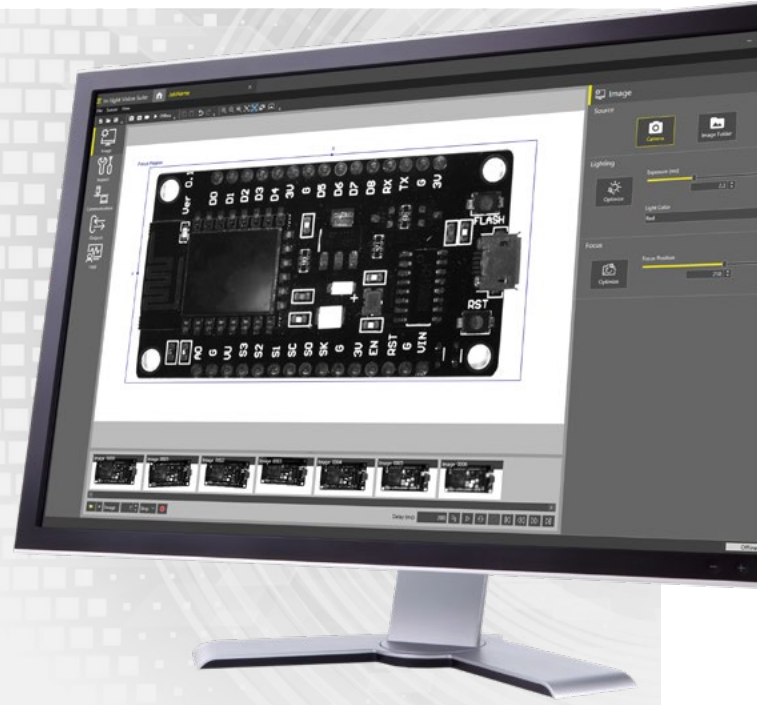
Setup Image



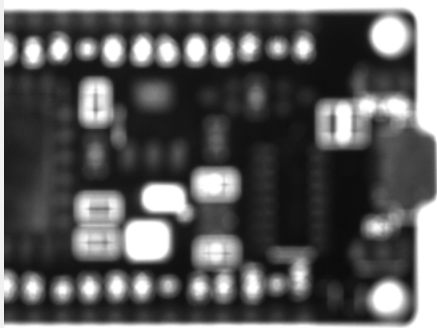
Inspect Part



Run HMI



## 2-click image setup



1



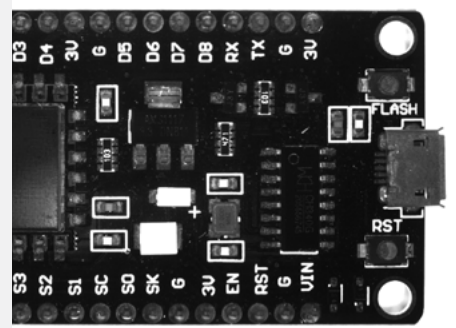
Optimize Exposure



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.



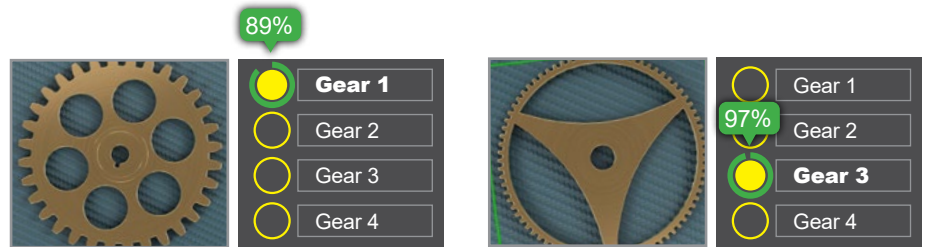
## Training

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



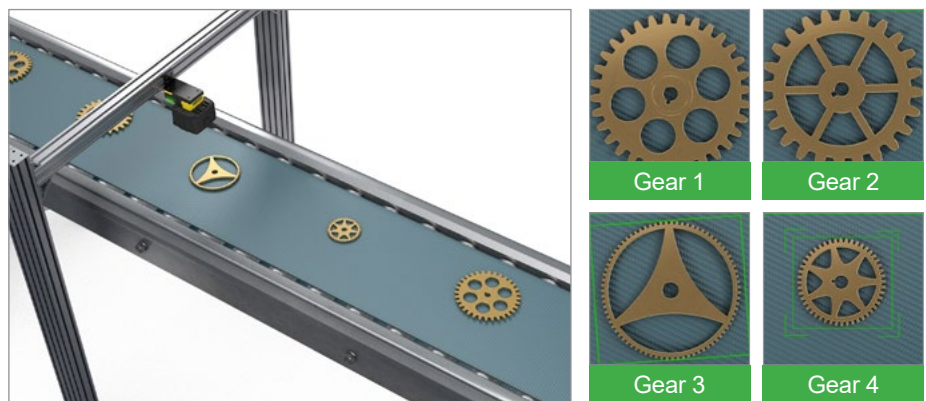
## Confidence score

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.



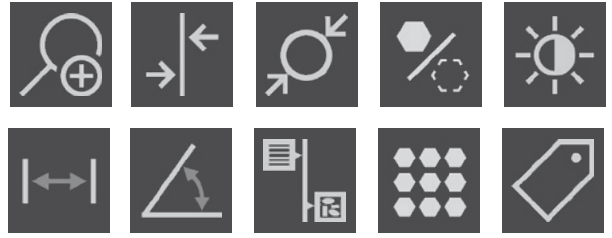
## Multi-class functionality

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.



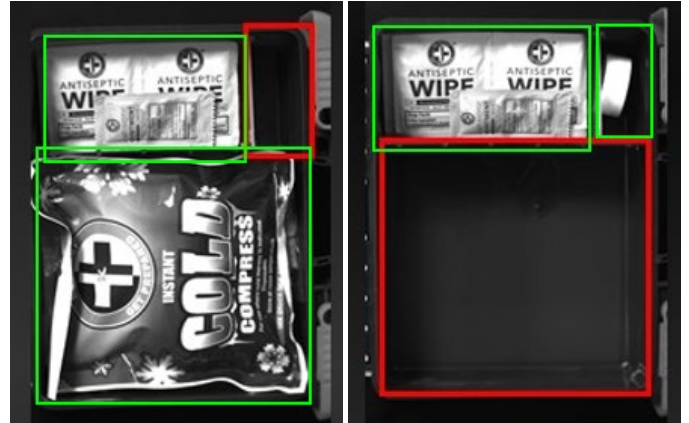
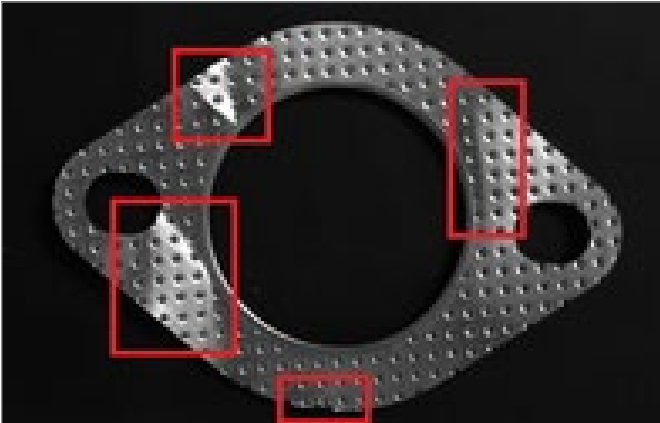
## Rule-based vision tools

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

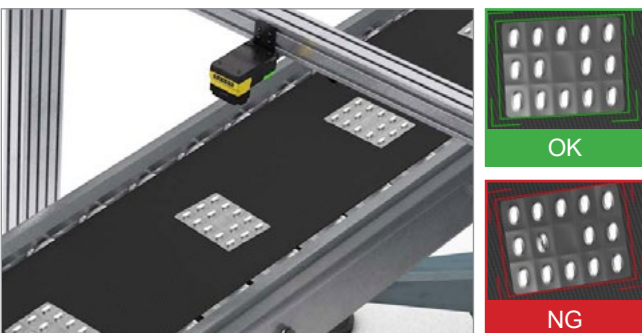
### Bottle seal check



### Scoop presence in container



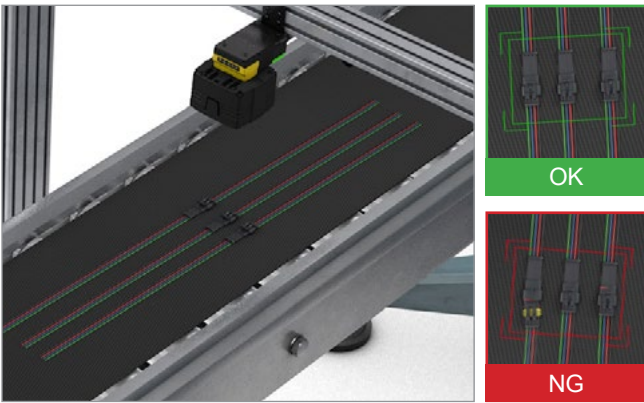
### Blister pack check



### PCB component check



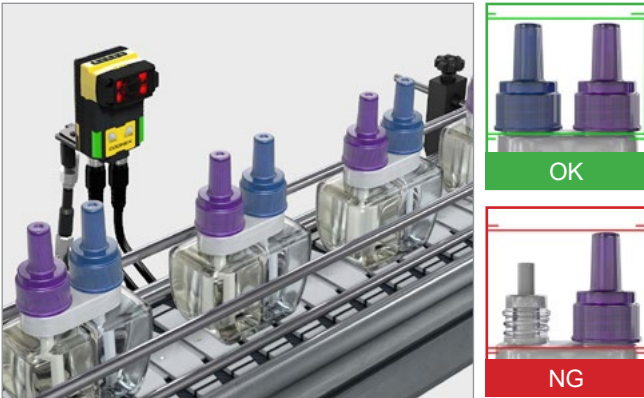
### Connector insertion check



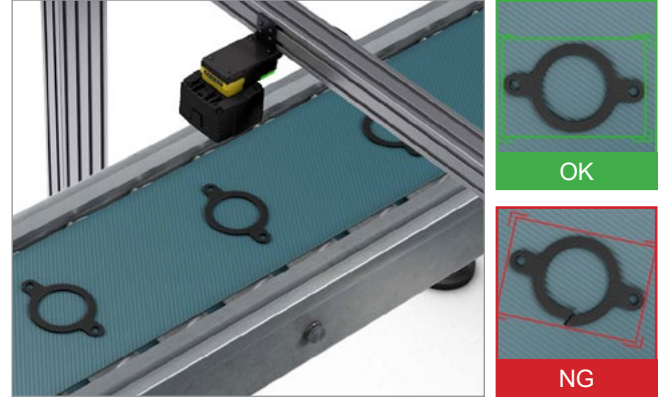
### Label defects



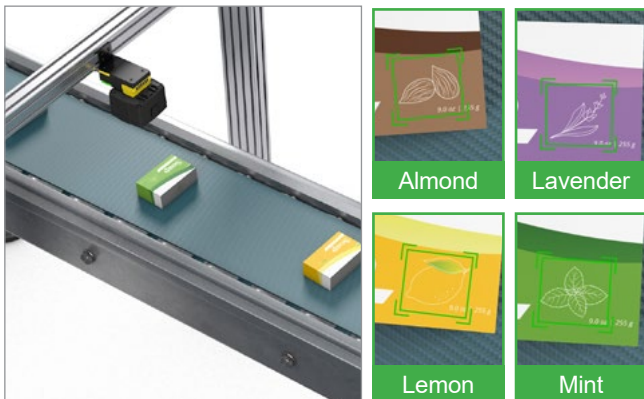
### Air freshener quality check



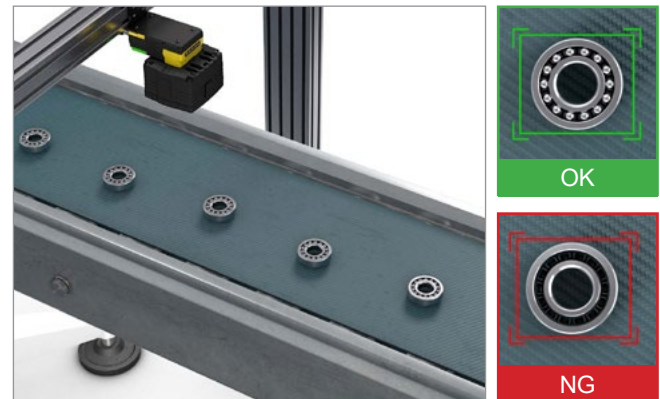
### Gasket quality check



### Soap scent classification



### Bearing check



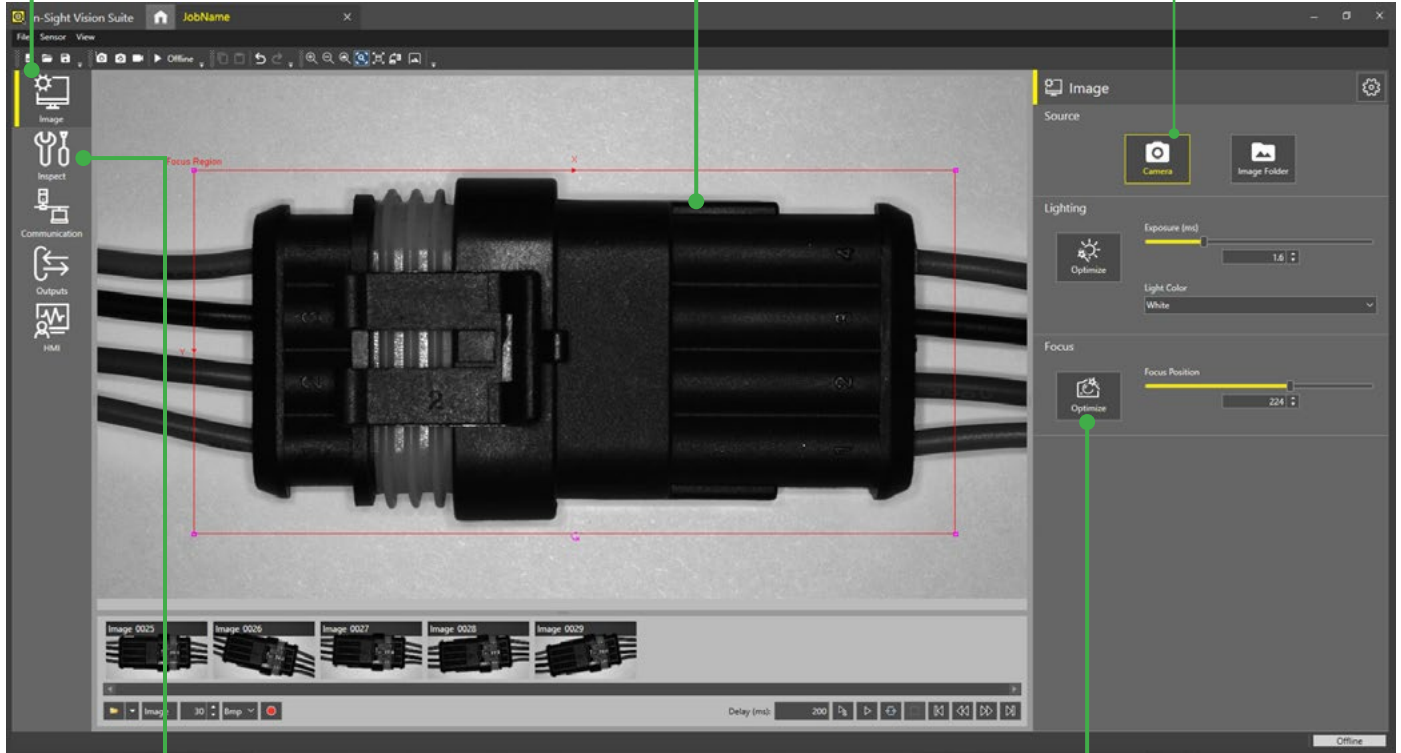
# EasyBuilder development environment simplifies setup and delivers rapid turnaround

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

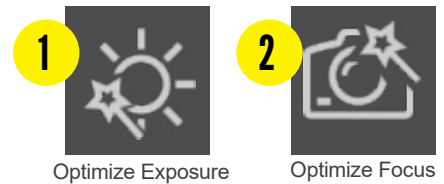
Image-centric **point-and-click** functionality allows users to quickly set up tools

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



## 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

**Field-interchangeable optical accessories** increase flexibility to solve variable applications

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

**Multi-core processor** enables fast acquisition

**Indicator lights** for operator feedback

**Gigabit Ethernet** delivers fast communication speeds and image offload

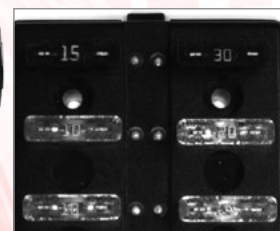
Powered by 24V

## 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



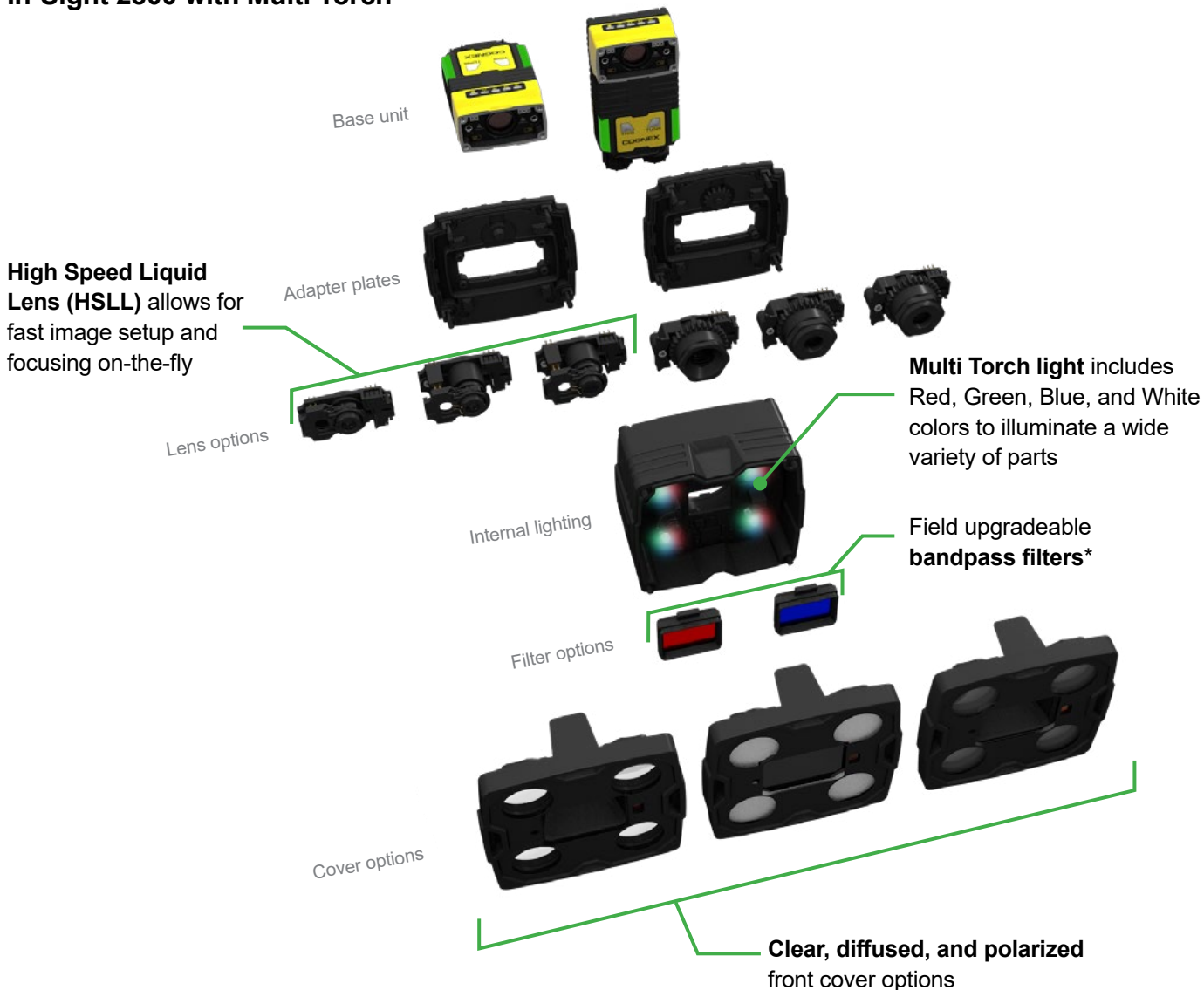
**Blue light:**  
Numbers are clear



## Modular, scalable architecture for current and future needs

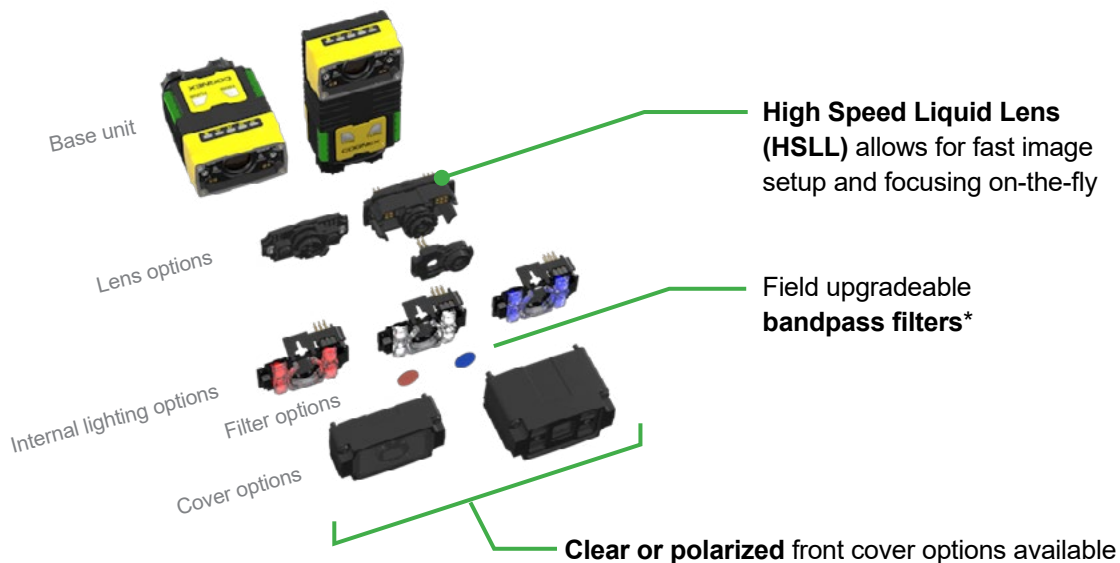
The In-Sight 2800 series offers a wide variety of accessories and field-changeable components. This flexibility enables manufacturers to quickly adapt to new parts and keep up with changing demands, such as part changes, faster line speeds, and higher quality standards.

### In-Sight 2800 with Multi Torch



\*Sold separately

# In-Sight 2800 Mini



\*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 HSSL >	
ILLUMINATION	Multi Torch RGBW >	
FRONT WINDOW	Multi Torch clear >	
USER INTERFACE	EasyBuilder >	
TOOLSET	VICI EL Classifier Toolset >	
<input type="button" value="START COVER"/> <input type="button" value="GET BILL OF MATERIALS"/>		

[configurator.cognex.com/en/insight2800](http://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 <sup>1</sup> (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: 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	Serial and 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 ( <a href="#">Access certification files online</a> )
Approvals	EU CE, US FCC, TUV CB NRTL IEC 61010

<sup>1</sup> SVGA options are monochrome only.

# Field of view diagrams

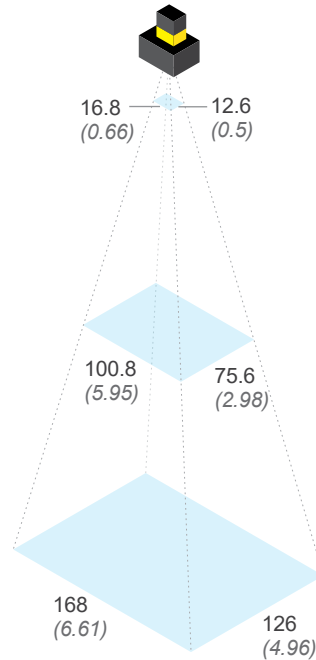
**Working distances**  
Units: mm (in)

**Minimum**  
50 (1.97)

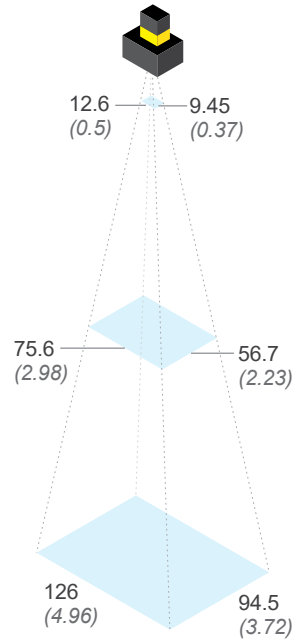
**Midpoint**  
300 (11.8)

**Maximum**  
500 (19.69)

**Multi Torch with 12 mm lens**



**Multi Torch with 16 mm lens**



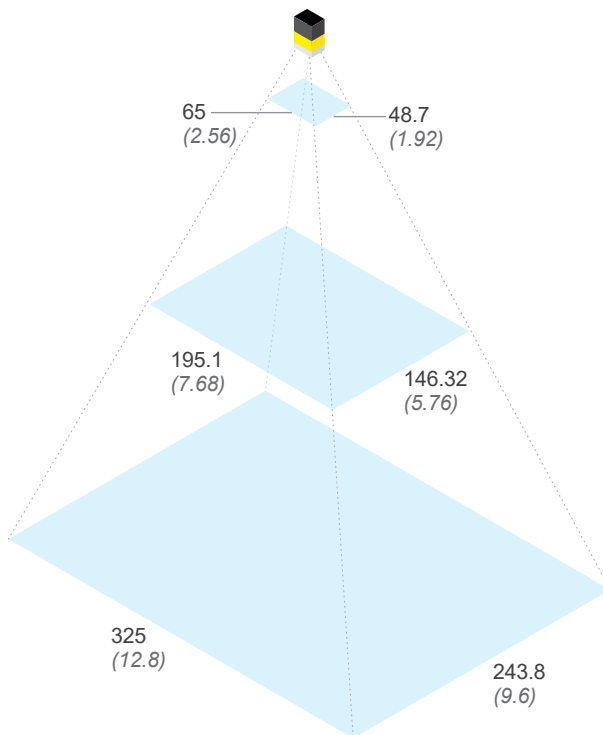
**Working distances**  
Units: mm (in)

**Minimum**  
50 (1.97)

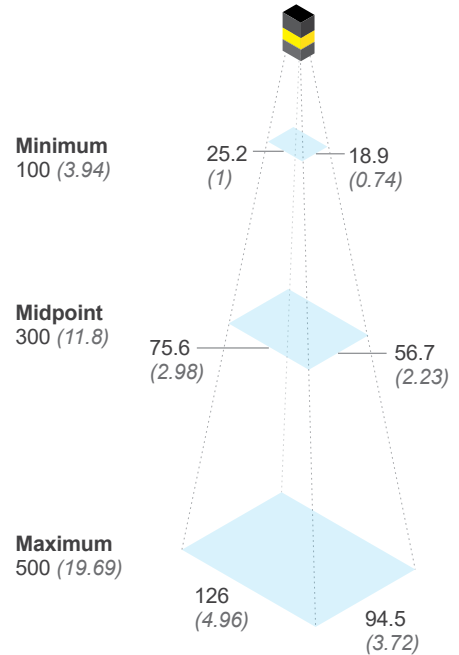
**Midpoint**  
300 (11.8)

**Maximum**  
500 (19.69)

**Mini with 6.2 mm lens**



**Mini with HPIL and 16 mm lens**




**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
	CBB-PWRIO-05	5M	M12-12 to flying lead, straight
	CBB-PWRIO-10	10M	
	CBB-PWRIO-15	15M	
	CBB-PWRIO-05R	5M	M12-12 to flying lead, right-angled
	CBB-PWRIO-10R	10M	
	CBB-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



## 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

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

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

### 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

# Dimensions



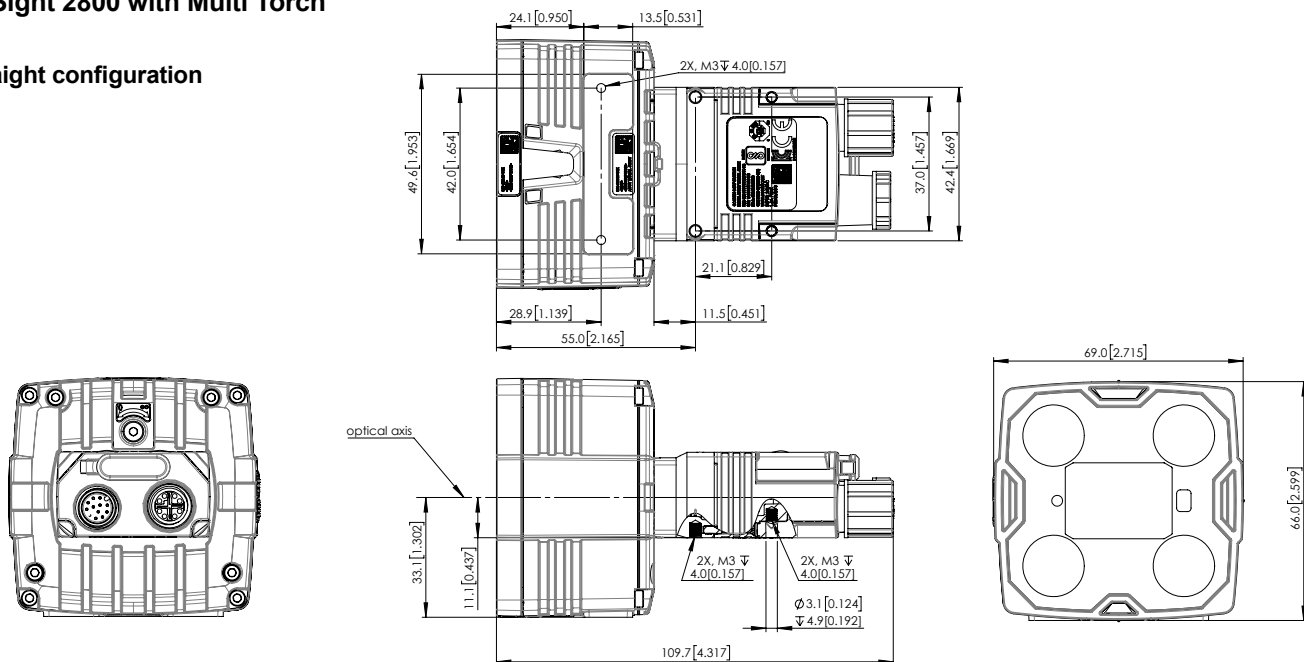
## Find the right specifications

Build your customized In-Sight 2800 and download technical drawings and CAD files for your configuration.

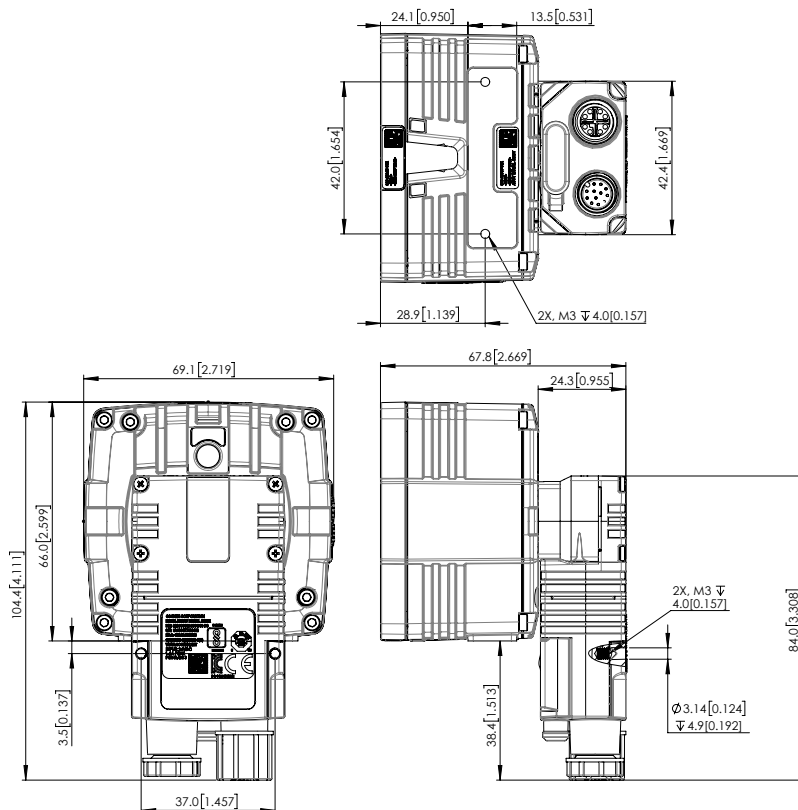
[configurator.cognex.com/en/insight2800](http://configurator.cognex.com/en/insight2800)

### In-Sight 2800 with Multi Torch

#### Straight configuration

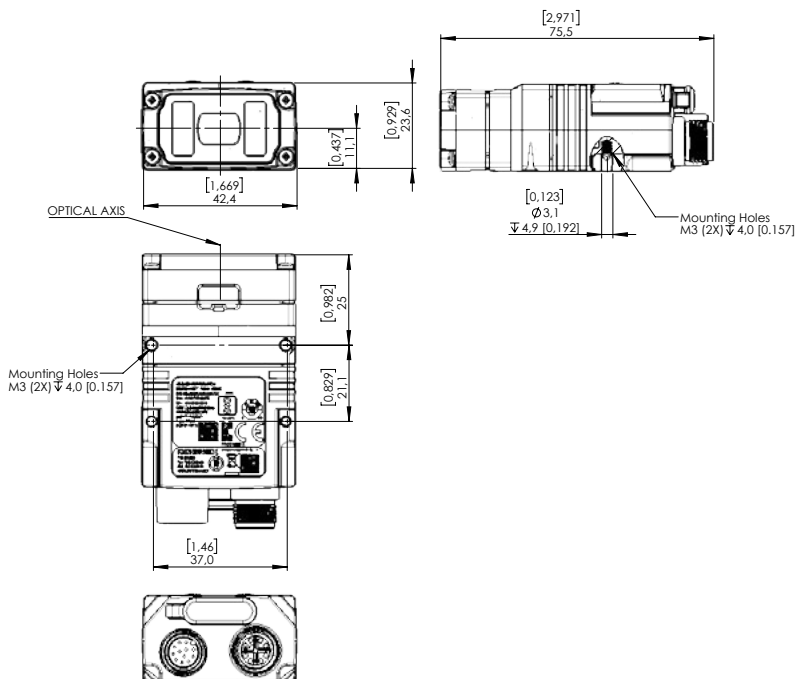


#### Right angle configuration

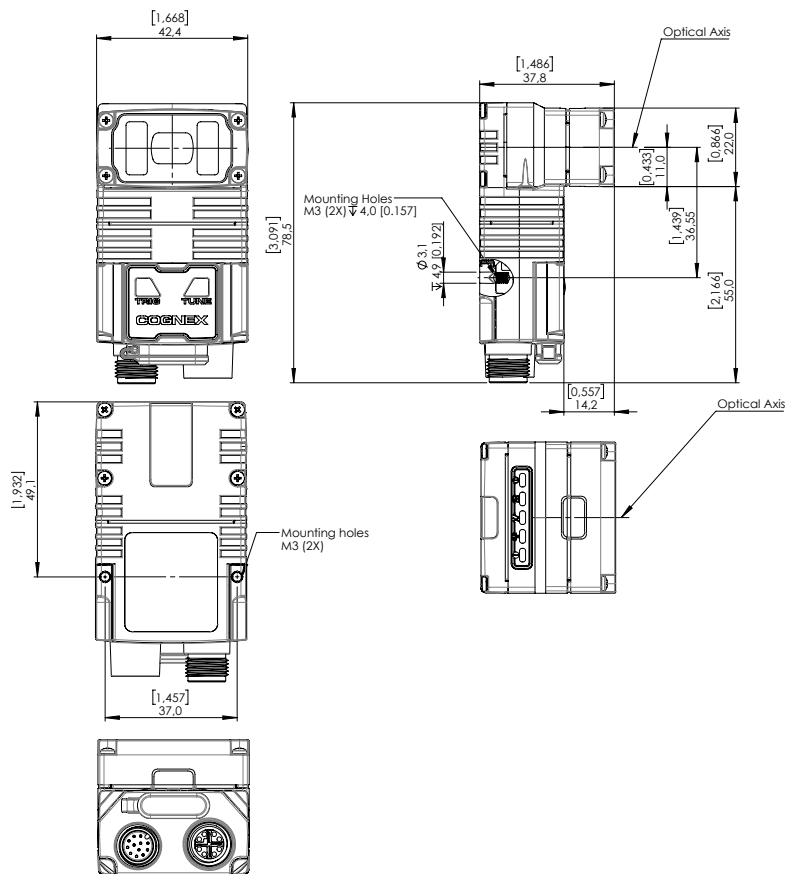


# In-Sight 2800 Mini with 6.2 mm lens front cover

## Straight configuration

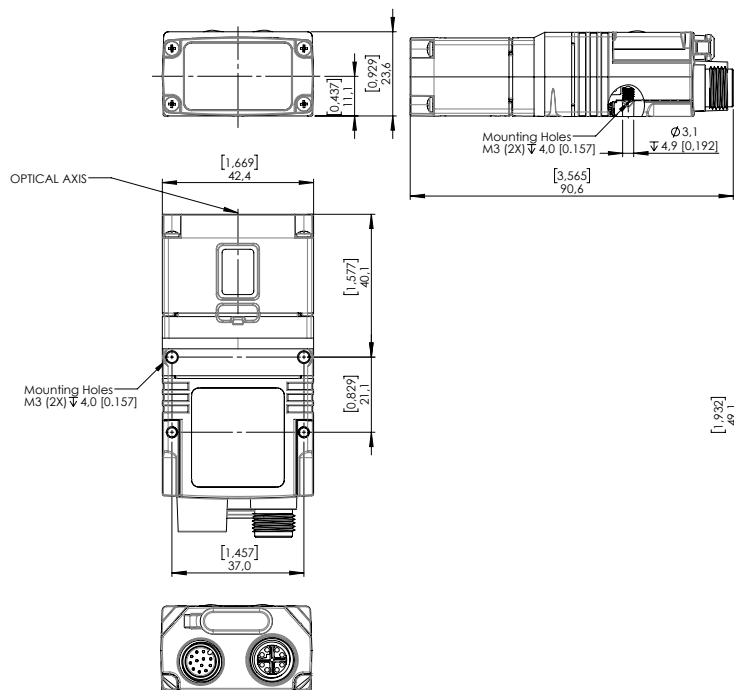


## Right angle configuration

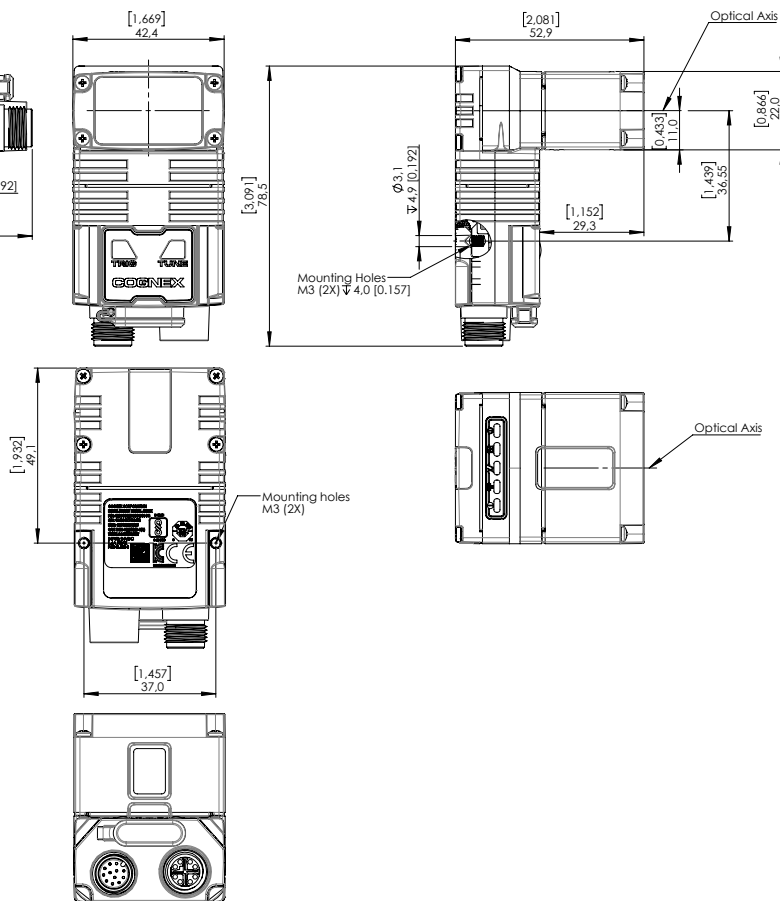


# In-Sight 2800 Mini with 16 mm lens HPIL front cover

## Straight configuration



## Right angle configuration



# 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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