COGNEX

In-Sight® 2000 Series
Vision Sensor
Reference Guide

2020 June 15
Revision: 5.9.2.1

Introduction

The In-Sight® 2000 is a compact, network-ready, stand-alone machine vision sensor used for automated inspection and measurement applications on the factory floor. All models can be easily programmed remotely over a network using an intuitive user interface.

Support

Resources available to assist you in using the vision sensor:

- The *In-Sight® Explorer Help* and *EasyBuilder Help* files, provided with In-Sight Explorer software.

- The In-Sight online support site: cognex.com/support/insight.

Standard Components

> ⓘ **Note**:
> - Cables are sold separately.
>
> - If a standard component is missing or damaged, immediately contact your Cognex Authorized Service Provider (ASP) or Cognex Technical Support.

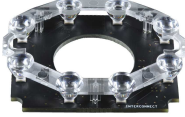| Product	Components
In-Sight 2000 Vision Sensor	1. Optics module, featuring high brightness LED ring light and S-Mount/M12 lens, or liquid lens with auto-focus capability 2. Main module, including sensor and CPU 3. I/O connector module
In-Sight 2000 Mini Vision Sensor	1. Optics module, featuring LED light and liquid lens with auto-focus capability 2. Main module, including sensor and CPU 3. I/O connector module

Accessories

You can purchase the following components separately. For a list of options and accessories, contact your local Cognex sales representative.

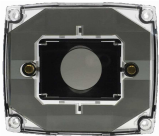## In-Sight 2000 Vision Sensor Lenses, Lights, Filters and Covers

Lens Options
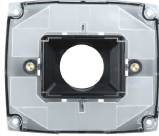
Lenses	Part Number	
Lens, M12, 3.6 mm	LM12-03-01	
Lens, M12, 6 mm	LM12-06-01	
Lens, M12, 8 mm	LM12-08-01	
Lens, M12, 12 mm	LM12-12-01	
Lens, M12, 16 mm	LM12-16-01	
Lens, M12, 25 mm	LM12-25-01	
Lens Spacer, M12, 16 mm	LM12-SPACER-16-0	
Lens Spacer, M12, 25 mm	LM12-SPACER-25-01	

Lights

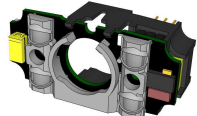| Lights	Part Number	
High Brightness Red LED Ring Light	IFS-2000-HBRING-RD	
High Brightness White LED Ring Light	IFS-2000-HBRING-WH	
High Brightness Blue LED Ring Light	IFS-2000-HBRING-BL	
High Brightness Near IR LED Ring Light	IFS-2000-HBRING-IR	

Filters and Covers

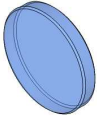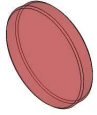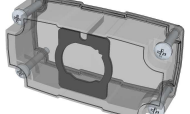| Filters and Covers	Part Number	
Red Bandpass Filter, 635 nm	IMRF-2000-BP635	
Blue Bandpass Filter, 470 nm	IMBF-2000-BP470	
IR Bandpass Filter, 850 nm	IMIF-2000-BP850	

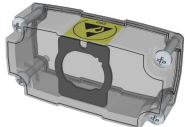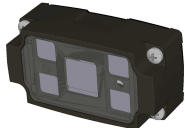| Filters and Covers	Part Number	
Polarizer Cover	IMPF-2000-POLAR	
Replacement Cover	IFS-2000-HBRING-CV	
Clear Cover	IFS-2000-HBRING-CC	

In-Sight 2000 Mini Vision Sensor Lights, Filters and Covers

Lights

Lights	Part Number	
Red LED Light for 6.2 mm Lens	DM150-LED-RED	
White LED Light for 6.2 mm Lens	DM150-LED-WHT	
Blue LED Light for 6.2 mm Lens	DM150-LED-BLU	
High Powered Red LED Light for 16 mm Lens	DM260-LED-RED-HP	
High Powered White LED Light for 16 mm Lens	DM260-LED-WHT-HP	

Filters and Covers

Filters and Covers	Part Number	
Blue Bandpass Filter	DM150-BP470	
Red Bandpass Filter	DM150-BP635	
Clear Cover for 6.2 mm Lens	DM150-CVR-CLR	

Filters and Covers	Part Number	
Clear Cover for 6.2 mm Lens, ESD Safe	DM150-CVR-ESD	
Polarized Cover for 6.2 mm Lens	DM260-LENS-62CVR-F	
Extended Cover for 16 mm Lens, Un-polarized	DM260-LENS-16CVR	
Extended Cover for 16 mm Lens, Half-polarized	DM260-LENS-16CVR-P	
Extended Cover for 16 mm Lens, Fully Polarized	DM260-LENS-16CVR-F	

Cables

Cables	Part Number	
Breakout Cable, M12-12 to Flying Lead	CCB-PWRIO-xx (xx specifies length: 5m, 10m, 15m)	
Ethernet Cable, X-coded M12-8 to RJ-45 Cable	CCB-84901-2001-xx (xx specifies length: 2m, 5m, 10m, 15m, 30m)	
I/O Module Cable M12-12 to DB15	CCB-PWRIO-MOD-xx (xx specifies length: 2m, 5m)	

Power Supplies (Non-PoE Models Only)

Power Supply Accessories	Part Number	
Cognex 24VDC Power Supply	ACC-24I	

Power Supply Accessories	Part Number	
North America Power Cord	CBLI-24VDUS	
Japan Power Cord	CBLI-24VDJP	
United Kingdom Power Cord	CBLI-24VDUK	
Europe Power Cord	CBLI-24VDEU	

Mounting Brackets

Mounting Brackets	Part Number	
Universal Mounting Bracket	DM100-UBRK-000	
Pivot Mounting Bracket	DM100-PIVOTM-00	
Flat Surface Mounting Plate Adapter	BKT-2000-ADAPT-00	

I/O Module

I/O Modules	Part Number	
In-Sight CIO-1400 I/O Expansion Module ⓘ **Note**: The CIO-1400 I/O expansion module supports In-Sight 2000 series vision sensors with firmware version 5.3.0 and higher.	CIO-1400	

Replacement Kit

Replacement Kit	Part Number	
Screws, Washers, and Caps Kit	IS2000-CAPS-KIT	

Connectors and Indicators

Connector	Function
Ethernet connector (left)	Connects the Ethernet cable and supplies power[1] to the vision sensor. For more information, refer to *Ethernet Cable Specifications* on page 50.
Power, I/O and RS-232 connector (right)	Connects the Breakout cable, which provides connections to an external power supply[2], the acquisition trigger input, general-purpose inputs, high-speed outputs, and RS-232 serial communications. For more information, refer to *Breakout Cable Specifications* on page 51. Alternately, this connector is used to attach the I/O Module cable to a compatible In-Sight I/O module, which adds general-purpose discrete I/O. For more information, refer to *I/O Module Cable Specifications* on page 52.

Indicator		Function
⓪	Power LED	The green LED illuminates to indicate that the vision sensor is powered on.
☑	Status LED	Yellow when active. User-configurable (LED 5 Yellow).
✓X	Pass/Fail LED	Green (pass) or red (fail) when active. User configurable (LED 4 Green/LED 4 Red).
品	Network LED	The yellow LED flashes to indicate network activity.
❗	Error LED	Red when active.
TRIG	Trigger button	Manually triggers an image acquisition when the vision sensor is either: • Online and the Trigger type is configured as Manual • Offline
TUNE	Tune button	Unsupported.

---

[1] Only available on PoE models.

[2] Not applicable to PoE models.

Installation

Read this section to learn how the vision sensor connects to its standard components and accessories. For a list of options and accessories, contact your Cognex sales representative.

> ⓘ **Note**:
> - Cables are sold separately.
> - If a standard component is missing or damaged, immediately contact your Cognex Authorized Service Provider (ASP) or Cognex Technical Support.

⚠ **CAUTION**: All cable connectors are keyed to fit the connectors on the vision sensor. Do not force the connections or damage may occur.

Install the In-Sight 2000 Vision Sensor

Mounting Configurations

Perform the following steps to change between the in-line and right-angle configuration.

> ⓘ **Note**:
> - Switching between the in-line and right-angle configuration is recommended only up to 10 times in the lifetime of the vision sensor.
> - You can order a replacement kit (IS2000-CAPS-KIT) if you misplaced screws, washers or caps.

⚠ **CAUTION**: Make sure that no electrostatic charges are applied to the PCB (e.g., wear ESD shoes). If the main module is separated from the I/O connector module, make sure to reassemble them correctly. Otherwise, the IP rating can be compromised.

1. Verify that the 24VDC power supply is unplugged and not receiving power.

2. Carefully remove the screw covers, threaded cap nuts, and washers.
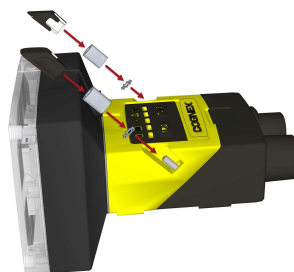
3. Detach the main module and the I/O connector module by firmly pulling them apart.
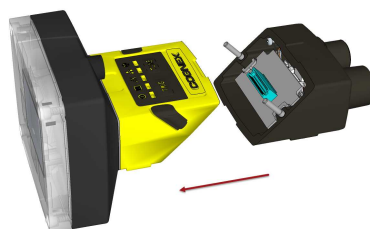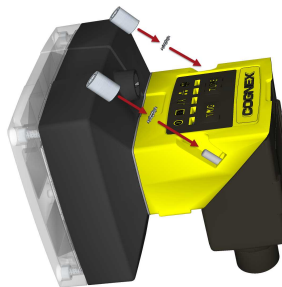
4. Change the orientation.

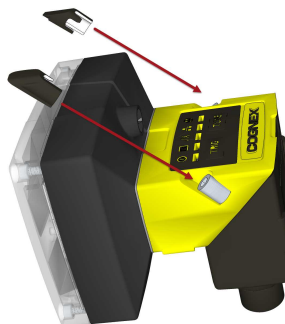5. Reattach the I/O connector module to the main module.

6. Reinstall the washers and fasten the cap nuts.

7. After each cap nut has been fastened, torque to 0.12 Nm (1.06 in-lb) and reinstall the screw covers.

   (i) **Note**: The left and right screw covers are different. Make sure to attach them correctly.

8. Restore power to the 24VDC power supply and turn it on if necessary.
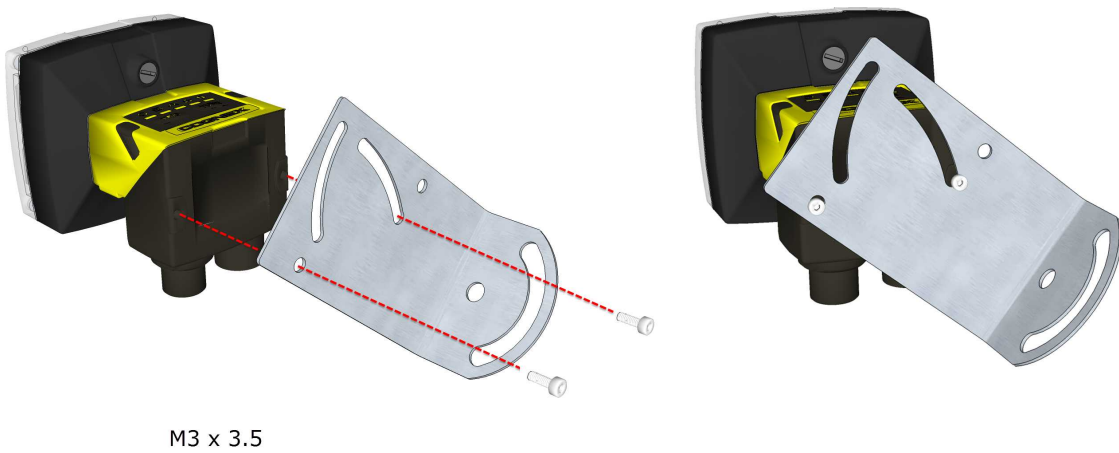
Mount the Vision Sensor

Mounting the vision sensor at a slight angle (15°) can reduce reflections and improve performance.

In-line Configuration

Use the universal mounting bracket (DM100-UBRK-000) with the mounting holes on the I/O connector module.

M3 x 3.5

Right-Angle Configuration

M3 x 3.5

17

Set the Focus Position (S-Mount/M12 Lens Configuration)

Adjust the focus on the back of the light module. Turn the screw clockwise to focus at a shorter distance, and counter-clockwise to focus at a longer distance.