

COGNEX

In-Sight® SnAPP Series Quick Reference Guide



2024 February 21
Revision: 23.2.0.21

Precautions

To reduce the risk of injury or equipment damage, observe the following precautions when you install the Cognex product:

- The safety of any system incorporating this product is the responsibility of the assembler of the system.
- Do not install Cognex products where they are exposed to environmental hazards such as excessive heat, dust, moisture, humidity, impact, vibration, corrosive substances, flammable substances, or static electricity.
- Route cables and wires away from high-current wiring or high-voltage power sources to reduce the risk of damage or malfunction from the following causes: over-voltage, line noise, electrostatic discharge (ESD), power surges, or other irregularities in the power supply.
- Do not expose the image sensor to laser light. Image sensors can be damaged by direct, or reflected, laser light. If your application requires laser light that might strike the image sensor, use a lens filter at the corresponding laser wavelength. For suggestions, contact your local integrator or application engineer.
- This product does not contain user-serviceable parts. Do not make electrical or mechanical modifications to product components. Unauthorized modifications can void your warranty.
- Changes or modifications not expressly approved by the party responsible for regulatory compliance could void the user's authority to operate the equipment.
- Include service loops with cable connections.

- Ensure that the cable bend radius begins at least six inches from the connector. Cable shielding can be degraded or cables can be damaged or wear out faster if a service loop or bend radius is tighter than 10X the cable diameter.
- This device should be used in accordance with the instructions in this manual.
- All specifications are for reference purposes only and can change without notice.

Symbols

The following symbols indicate safety precautions and supplemental information:



WARNING: This symbol indicates a hazard that could cause death, serious personal injury or electrical shock.



CAUTION: This symbol indicates a hazard that could result in property damage.



Note: This symbol indicates additional information about a subject.



Tip: This symbol indicates suggestions and shortcuts that might not otherwise be apparent.

Accessories

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

Mounting Brackets

Accessory	Product Number	Illustration
Pivot mounting bracket	DM100-PIVOTM-01	
Tilted angle pivot bracket	DMBK-DMPIVOT-00	

Cables

i Note: Cables are sold separately.

Accessory	Product Number	Illustration
Ethernet Cable, X-coded M12-8 to RJ-45	CCB-84901-2001-xx (straight, xx specifies length: 2m, 5m, 10m, 15m, 30m)	
Ethernet Cable, X-coded M12-8 to RJ-45	CCB-84901-2002-xx (right-angled, xx specifies length: 2m, 5m, 10m)	

Accessory	Product Number	Illustration
Ethernet Cable, Robotic X-Coded M12-8 to RJ-45	CCB-84901-2RBT-xx (straight, xx specifies length: 2m, 5m, 10m)	
X-Coded to A-Coded Ethernet cable adapter, 0.5 m	CCB-M12X8MS-XCAC	
Power and I/O Breakout Cable, M12-12 to Flying Lead	CCB-PWRIO- xx (straight, xx specifies length: 5m, 10m, 15m)	
Power and I/O Breakout Cable, M12-12 to Flying Lead	CCB-PWRIO-xxR (right-angled, xx specifies length: 5m, 10m, 15m)	
I/O Module Cable M12-12 to DB15	CCB-PWRIO-MOD-xx (xx specifies length: 2m, 5m)	
RS-232 Connection Cable	CCB-M12xDB9Y-05	
I/O Extension Cable	CKR-200-CBL-EXT	

Setting Up Your In-Sight Vision Sensor

Read this section to learn how the vision sensor connects to its standard components and accessories.

Note:

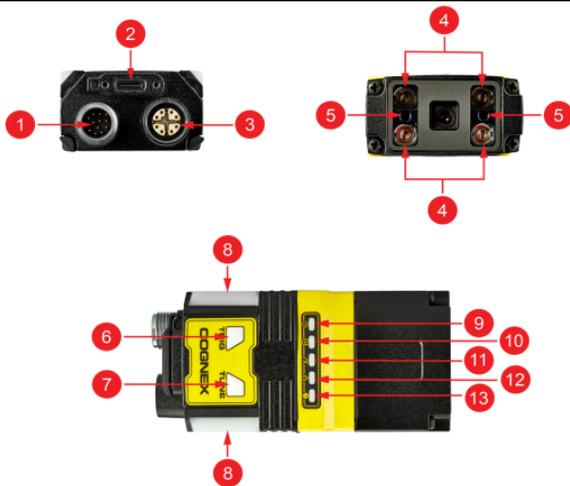
- Cables are sold separately.
- If a standard component is missing or damaged, immediately contact your Cognex Authorized Service Provider (ASP) or Cognex Technical Support.



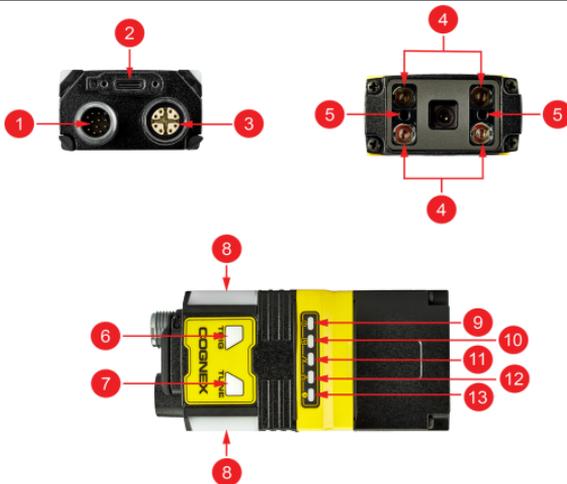
CAUTION: All cable connectors are keyed to fit the connectors on the vision sensor. Do not force the connections or damage may occur.

Vision Sensor Layout

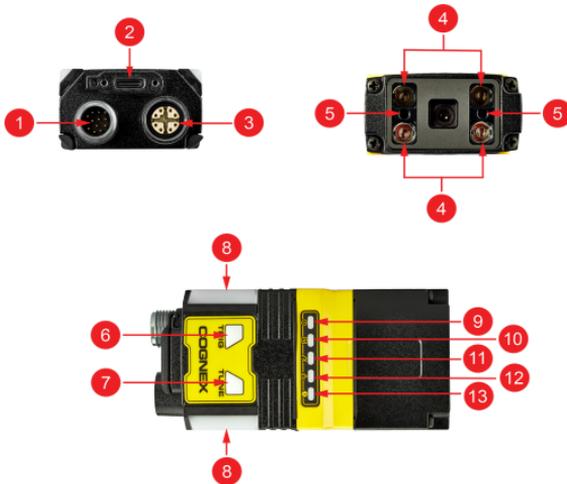
The image and table below shows the elements of the vision sensor.



Number	Description
1	Power I/O Breakout cable connector
2	USB-C slot (with plastic cover)
3	Ethernet connector
4	Illumination LEDs



Number	Description
5	LED aimer
6	Trigger button <div data-bbox="487 684 947 733" style="background-color: #f0f0f0; padding: 5px;"> i Note: The Trigger Button is not supported. </div>
7	Tune button <div data-bbox="487 774 947 823" style="background-color: #f0f0f0; padding: 5px;"> i Note: The Tune Button is not supported. </div>
8	Indicator LEDs



Number	Description
9	Power LED indicator
10	Train status/Trigger status LED indicator
11	Good/bad inspection LED indicator
12	Communication LED indicator
13	Error LED indicator

Dimensions

The following sections list dimensions of the vision sensor.

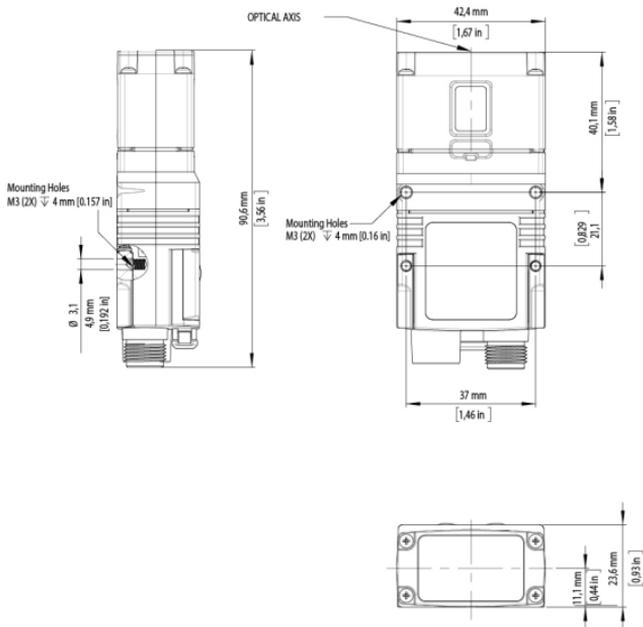
Note:



- Dimensions are in millimeters and are for reference purposes only.
- All specifications are for reference purposes only and can change without notice.

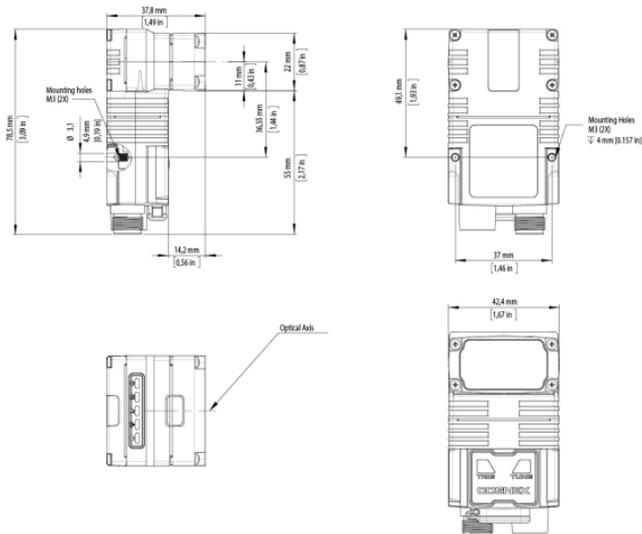
In-Sight SnAPP with 16 mm Lens

The following image shows the dimensions of In-Sight SnAPP equipped with 16 mm lens.



In-Sight SnAPP with 6.2 mm Lens - Right Angle Configuration

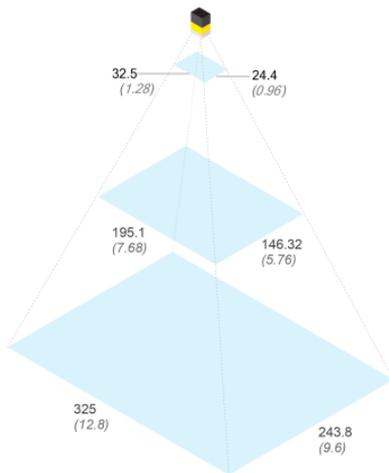
The following image shows the dimensions of In-Sight SnAPP equipped with L-shaped extension and 6.2 mm lens.



Field of View and Working Distance

This section provides the Field of View (FoV) values for the In-Sight SnAPP configurations. *(On the diagrams, the values at the top are in mm and the values at the bottom in the brackets are in inch).*

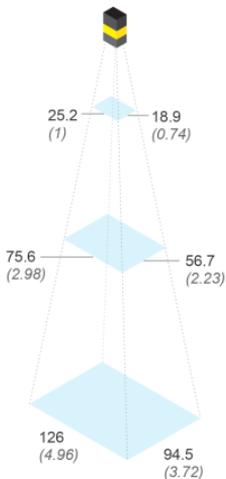
In-Sight SnAPP with 6.2 mm Lens



	Working Distance	Horizontal FOV	Vertical FOV
Minimum	50 mm (1.97 in)	32.5 mm (1.28 in)	24.4 mm (0.96 in)
Midpoint	300 mm (11.8 in)	195.1 mm (7.68 in)	146.3 mm (5.76 in)

	Working Distance	Horizontal FOV	Vertical FOV
Maximum	500 mm (19.69 in)	325 mm (12.8 in)	243.8 mm (9.60 in)

In-Sight SnAPP Mini with 16 mm Lens



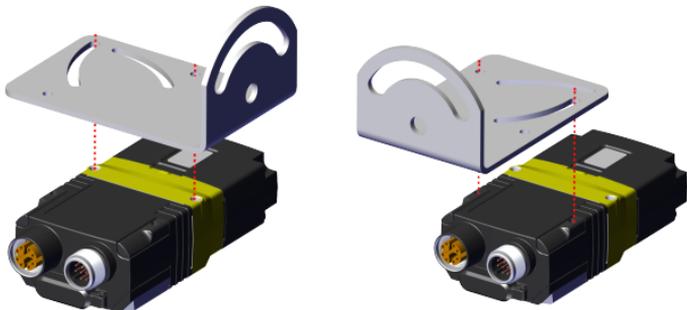
	Working Distance	Horizontal FOV	Vertical FOV
Minimum	200 mm (7.87 in)	25.2 mm (1 in)	18.9 mm (0.74 in)
Midpoint	450 mm (17.72 in)	75.6 mm (2.98 in)	56.7 mm (2.23 in)

	Working Distance	Horizontal FOV	Vertical FOV
Maximum	700 mm (27.56 in)	126 mm (4.96 in)	94.5 mm (3.72 in)

Mounting the Vision Sensor

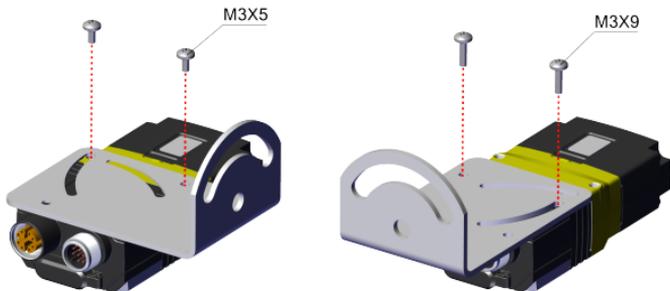
CAUTION: The vision sensor has to be grounded, either by mounting the vision sensor to a fixture that is electrically grounded or by attaching a wire from the vision sensor's mounting fixture to frame ground or Earth ground. If a ground wire is used, it has to be attached to one of the mounting points on the bottom plate of the vision sensor and not to the mounting points on the front of the vision sensor.

1. Align the vision sensor with the holes on the universal mounting bracket.

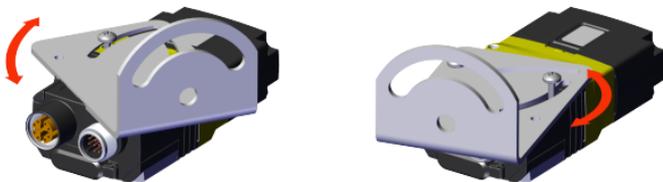


2. Insert the screws.

Note: The vision sensor has two sets of threaded holes for mounting. Use only one set depending on the best configuration for your application. For the threaded holes closer to the front of the vision sensor you need M3X5 screws, for those closer to the connectors M3X9.

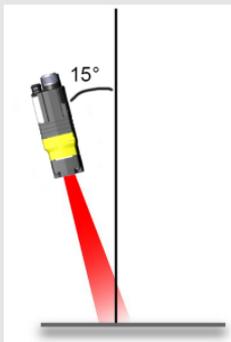


3. If needed, you can rotate the mounting bracket up to 45 degrees. To do so, loosen the screw in the curved slot.



Note:

Mounting the vision sensor at a slight, 15 degree angle reduces reflections and improves performance.



Connecting the Ethernet Cable

CAUTION: The Ethernet cable shield has to be grounded at the far end. Whatever this cable is plugged into (typically a switch or router) should have a grounded Ethernet connector. A digital voltmeter has to be used to validate the grounding. If the far end device is not grounded, a ground wire should be added in compliance with local electrical codes.



1. Connect the Ethernet cable's M12 connector to the vision sensor ENET connector.
2. Connect the Ethernet cable's RJ-45 connector to a switch/router or PC, as applicable.



Note: Besides powering the vision sensor through a Breakout Cable, it is possible to power through PoE (Power over Ethernet) connection as well, in which case it is not necessary to use a Breakout Cable. In-Sight SnAPP configurations support PoE connection.

Connecting the Power and I/O Breakout Cable



CAUTION: To reduce emissions, connect the far end of the Breakout cable shield to frame ground.

Note:



- Perform wiring or adjustments to I/O devices when the vision sensor is not receiving power.
- You can clip unused wires short or use a tie made of non-conductive material to tie them back. Keep bare wires separated from the +24 V DC wire.

1. Verify that the 24 V DC power supply is unplugged and not receiving power.
2. Attach the +24 V DC connector of the Power and I/O Breakout cable and Ground wires to the corresponding terminals on the power supply. For more information, see *Specifications* on page 26.
3. Attach the M12 connector of the Power and I/O Breakout Cable to the 24 V DC connector of the vision sensor.
4. Restore power to the 24 V DC power supply and turn it on if necessary.

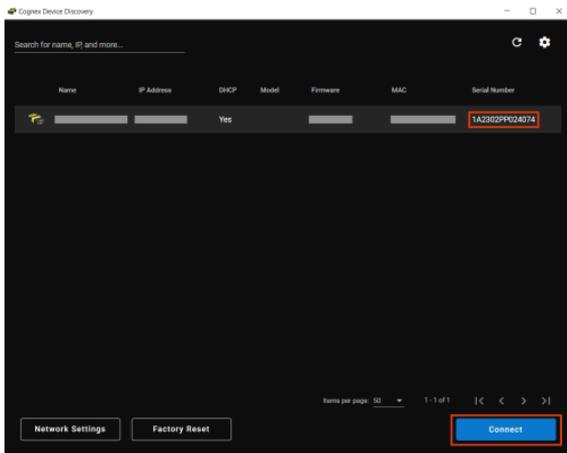
Using Your In-Sight SnAPP Vision Sensor

This section provides information on the installation of the In-Sight SnAPP, trigger types, and protocols.

How to Connect to the Vision Sensor

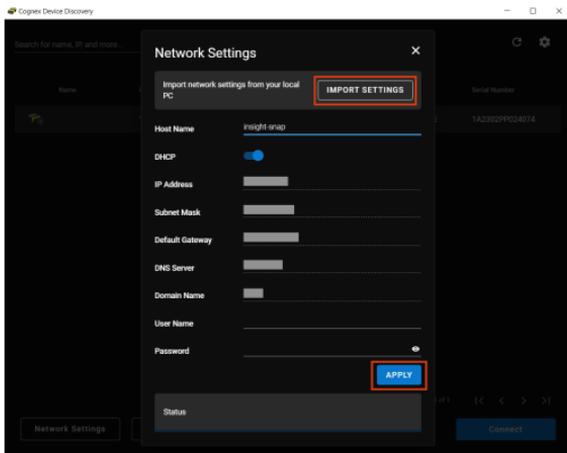
To connect to In-Sight SnAPP, perform the following steps:

1. Connect your vision sensor to a power source and the network.
2. Launch Cognex Device Discovery Utility. Make sure your PC is on the same network as your vision sensor.
3. Select your vision sensor from the list of available devices. If you have multiple Cognex products on your network, sort the list of available devices by Model by clicking on **Model**. You can also search for the Serial Number of your vision sensor by typing it into the search bar on the top left. The Serial Number is found on the sticker on your vision sensor, listed as S/N.
4. Click **Connect** to be redirected to the IP address of your vision sensor.



Network Settings

Configure the settings of your vision sensor by clicking on **Network Settings**. You can change the **Host Name** or set a **User Name** and a **Password**. You can also import network settings by clicking on the **Import Settings** button. Click **Apply** to save your changes.



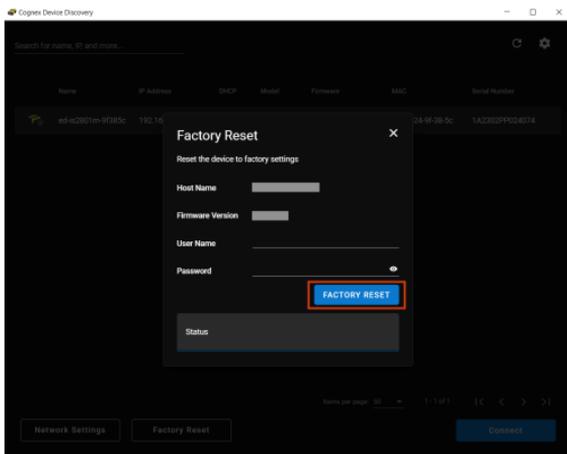
Factory Reset

You can reset the vision sensor to the factory settings in the following ways:

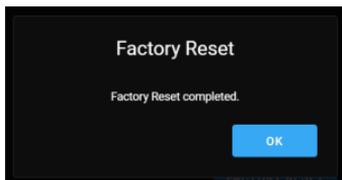
- Cognex Device Discovery
- Buttons on the vision sensor
- **Factory Reset** tab in the **Settings** of the vision sensor
See *In-Sight SnAPP Software Help*.

Perform Factory Reset through Cognex Device Discovery Utility

You can reset your vision sensor through Cognex Device Discovery Utility by clicking **Factory Reset**.



A dialog confirms the completion of the factory reset. Click **OK** to proceed.



Perform Factory Reset Manually with the Vision Sensor Buttons

You can reset the vision sensor manually during power on.

1. Press and hold the Tune button from initial power on.
2. Wait for the indicator LEDs to start flashing green and red, and you hear a beep.
3. Press the Trigger button once within the next 10 seconds. You hear another beep.
4. You can now let go of the Tune button.
5. The vision sensor performs factory reset and reboots.

The procedure is aborted and the device boots normally in the following cases:

- If you press or hold the Trigger button before step 2 is completed.
- If you release the Tune button before steps 2 or 3 are completed.
- If you do not press the Trigger button within the allotted 10 seconds.

Device I/O

The In-Sight SnAPP has the following pre-defined output lines:

Output Line	Signal Type	Notes
Out 0	Pass	Pulsed (150 ms)
Out 1	Fail	Pulsed (150 ms)
Out 2	Missed Trigger	Pulsed (150 ms)
Out 3	Active	Level (High or Low) High, if a trained program is loaded and outputs are enabled.



Note: Do not trigger the vision sensor faster than every 300 ms continuously because the outputs have a duty cycle of 50%.

Specifications

The following sections list general specifications for the vision sensor.

In-Sight SnAPP Series Vision Sensor

Specification	In-Sight SnAPP
Weight	6.2 mm: 141 g 16 mm: 169 g Right angle configuration adds 50 g
Power	24 V DC +/- 10%, PoE (Power over Ethernet)
Power Consumption	≤ 7.5 W
Operating Temperature	0–40 °C (32–104 °F)
Storage Temperature	-10–60 °C (14–140 °F)
Humidity	<95% non-condensing
Environmental	IP67 Note: IP67 rating applies only if all blind plugs and cables are attached properly, or the provided connector plug is installed. Also, make sure that the IP67-rated cover is installed properly.

Specification	In-Sight SnAPP
Shock (Shipping and Storage)	IEC 60068-2-27: 1000 shocks, semi-sinusoidal, 11 g, 10 ms ISTA-1A Standardized Testing - Packaged Products 150 lb or less
Vibration (Shipping and Storage)	IEC 60068-2-6: vibration test in each of the three main axis for 2 hours @ 10 Gs (10 to 500 Hz at 100m/s ² / 15 mm) FedEx Vibration Testing for packaged products 150 lbs or less
RS-232	RxD, TxD according to TIA/EIA-232-F

In-Sight SnAPP Series Vision Sensor Image Sensor

Specification	In-SightSnAPP
Image Sensor	1/2.8-inch CMOS monochrome and color
Image Sensor Properties	Pixel size: 2.8 μm (H) x 2.8 μm (V)
Image Resolution (pixels)	1440 x 1080 (1.6 mp)
Lens Type	Autofocus: 6.2 mm, 16 mm (High Speed Liquid Lens)

LED and Laser Wavelengths

Model	LED	Wavelength
In-Sight SnAPP Series Vision Sensor with 6.2mm Lens Illumination/with 16mm Lens and High Powered Illumination	White	Chromaticity coordinates acc. to CIE 1931 • Cx 0.34 (typ.) • Cy 0.33 (typ.)
	Red	617 nm

Regulations and Conformity

i Note: For the most current CE and UKCA declarations and regulatory conformity information, see the Cognex support site: cognex.com/support.

In-Sight SnAPP vision sensors have Regulatory Model number 50208, 50210, 50215, 50216 and meet or exceed the requirements of all applicable standards organizations for safe operation. However, as with any electrical equipment, the best way to ensure safe operation is to operate them according to the agency guidelines that follow. Please read these guidelines carefully before using your device.

Safety and Regulatory	
Manufacturer	Cognex Corporation One Vision Drive Natick, MA 01760 USA
CE	In-Sight SnAPP 1.6 MP: Regulatory Model 50208 In-Sight SnAPP 1.6 MP L-shaped: Regulatory Model 50210 In-Sight SnAPP 2 MP: Regulatory Model 50215 In-Sight SnAPP 2 MP L-shaped: Regulatory Model 50216 This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take immediate measures. This equipment complies with the essential requirements of the EU Directive 2014/30/EU. Declarations are available from your local representative.
EU RoHS	Compliant to the most recent applicable directive.

Safety and Regulatory

FCC	<p>FCC Part 15, Class A This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.</p>
<p>Korea</p> 	<p>This device is certified for office use only and if used at home, there can be frequency interference problems. A급 기기(업무용 방송통신기자재): 이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다. In-Sight SnAPP 1.6 MP: R-R-CGX-50208 In-Sight SnAPP 1.6 MP L-shaped: R-R-CGX-50210 In-Sight SnAPP 2 MP: R-R-CGX-50215 In-Sight SnAPP 2 MP L-shaped: R-R-CGX-50216</p>
TÜV	<p>In-Sight SnAPP 1.6 MP: Regulatory Model 50208 In-Sight SnAPP 1.6 MP L-shaped: Regulatory Model 50210 In-Sight SnAPP 2 MP: Regulatory Model 50215 In-Sight SnAPP 2 MP L-shaped: Regulatory Model 50216</p> <hr/> <p>NRTL: TÜV SÜD SCC/NRTL OSHA Scheme for UL/CAN 61010-1.</p> <hr/> <p>CB report available upon request. TÜV SÜD, IEC/EN 61010-1.</p>
UK	<p>Regulatory Model 50208 Regulatory Model 50210 Regulatory Model 50215 Regulatory Model 50216 This is a class A product. In a domestic environment, this product can cause radio interference, in which case the user is required to take adequate measures. This equipment complies with the essential requirements of the Electromagnetic Compatibility Regulations 2016. Declarations are available from your local representative.</p>

中国大陆RoHS (Information for China RoHS Compliance)

根据中国大陆《电子信息产品污染控制管理办法》(也称为中国大陆RoHS), 以下部份列出了本产品中可能包含的有毒有害物质或元素的名称和含量。



Part Name 部件名称	Hazardous Substances 有害物质					
	Lead (Pb) 铅	Mercury (Hg) 汞	Cadmium (Cd) 镉	Hexavalent Chromium (Cr (VI)) 六价铬	Polybrominated biphenyls (PBB) 多溴联苯	Polybrominated diphenyl ethers (PBDE) 多溴二苯醚
Regulatory Model 50208 Regulatory Model 50210 Regulatory Model 50215 Regulatory Model 50216	X	O	O	O	O	O
<p>This table is prepared in accordance with the provisions of SJ/T 11364. 这个标签是根据SJ/T 11364 的规定准备的。</p> <p>O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB / T26572 - 2011. 表示本部件所有均质材料中含有的有害物质低于GB / T26572 - 2011 的限量要求。</p> <p>X: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB / T26572 - 2011. 表示用于本部件的至少一种均质材料中所含的危害物质超过GB / T26572 - 2011 的限制要求。</p>						

For European Community Users

Cognex complies with Directive 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE).

This product has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment, if not properly disposed.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems for product disposal. Those systems will reuse or recycle most of the materials of the product you are disposing in a sound way.



The crossed out wheeled bin symbol informs you that the product should not be disposed of along with municipal waste and invites you to use the appropriate separate take-back systems for product disposal.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You may also contact your supplier for more information on the environmental performance of this product.

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