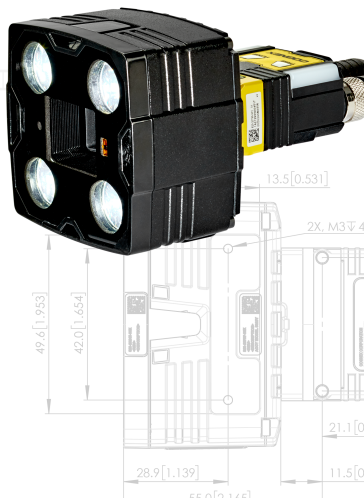# COGNEX

In-Sight® 2800 Series
Quick Reference Guide

2022 April 26
Revision: 22.1.1.127

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.

Lenses

Accessory	Product Number	Illustration
12mm Manual Focus Lens Module to be used with Multi Torch light	280-TORCH-MAN12	
16mm Manual Focus Lens Module to be used with Multi Torch light	280-TORCH-MAN16	
Blue bandpass filter supported with IS2800 Mini with 6.2mm lens illumination only	DM150-BP470	
Blue bandpass filter, 450nm	280-TORCH-BP635	
Red bandpass filter	DM150-BP635	
Red bandpass filter, 635nm	280-TORCH-BP450	

Lens Covers
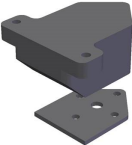
Accessory	Product Number	Illustration
Front cover. Use with a 6.2 mm lens only.	DM280-CVR-62	
Polarized front cover. Use with a 6.2 mm lens only.	DM260-LENS-62CVR-F	
Extended front cover. Use with a 16 mm lens only.	DM260-LENS-16CVR	
Extended front cover, half-polarized. Use with a 16 mm lens only.	DM260-LENS-16CVR-P	
Extended front cover, fully-polarized. Use with a 16 mm lens only.	DM260-LENS-16CVR-F	
Cross-polarized cover for Multi Torch	280-TORCH-COVPOL	
Clear cover for Multi Torch	280-TORCH-COVCLR	
Diffuse cover for Multi Torch	280-TORCH-COVDIF	

CAUTION: For 280-TORCH-COVPOL, 280-TORCH-COVCLR, and 280-TORCH-COVDIF equipped with a Time-of-Flight sensor, the device has been tested to be under the limits of a Class 1 Laser device.

CLASS 1 LASER PRODUCT

Mounting Brackets

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

Cables

> **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)	
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 System

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

> **Note**:
>
> (i)
> - 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 system. Do not force the connections or damage may occur.

Vision System Layout

The image and table below shows the elements of the vision system.
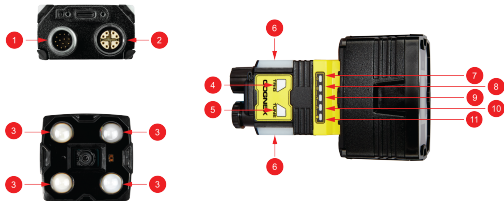
Number	Description
1	Power I/O Breakout cable connector
2	Ethernet connector
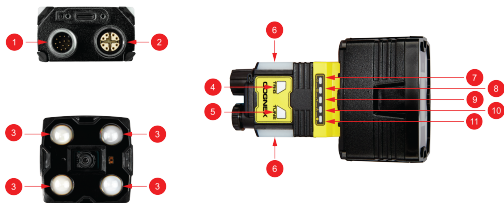
Number	Description
3	Illumination LEDs
4	Trigger button **Note**: The Trigger Button is not supported.
5	Tune button **Note**: The Tune Button is not supported.
6	Indicator LEDs
7	Power LED indicator
8	Train status/Trigger status LED indicator
9	Good/bad inspection LED indicator
10	Communication LED indicator
11	Error LED indicator

Dimensions

The following sections list dimensions of the vision system.

In-Sight 2800 Mini with 6.2 mm lens

The following image shows the dimensions of In-Sight 2800, equipped with 6.2 mm lens.
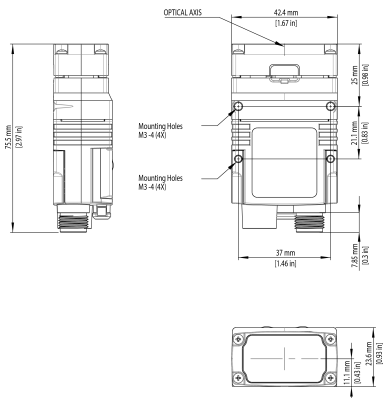
In-Sight 2800 Mini with 16 mm Lens

The following image shows the dimensions of In-Sight 2800 equipped with 16 mm lens.
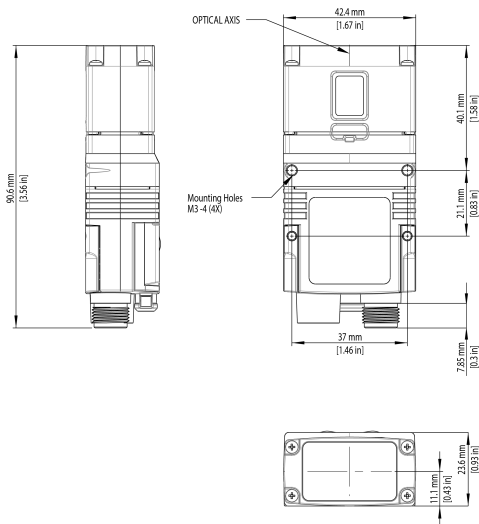
In-Sight 2800 Mini with 6.2 mm Lens - Right Angle Configuration

The following image shows the dimensions of In-Sight 2800 equipped with L-shaped extension and 6.2 mm lens.
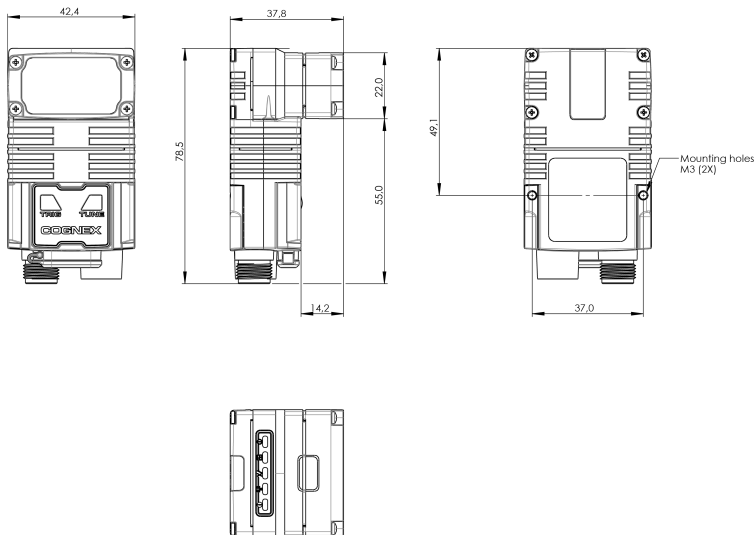
In-Sight 2800 Mini with 16 mm Lens - Right Angle Configuration

The following image shows the dimensions of In-Sight 2800 equipped with L-shaped extension and 16 mm lens.
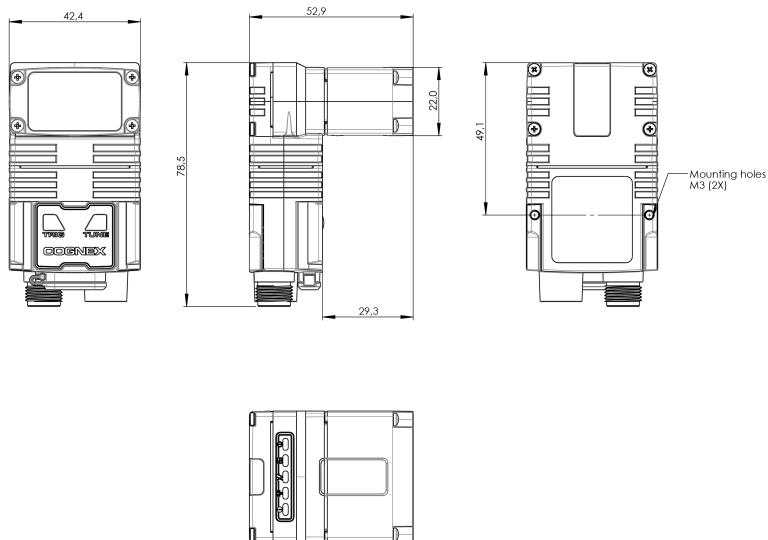
In-Sight 2800 with Multi Torch

The following image shows the dimensions of In-Sight 2800 equipped with Multi Torch.
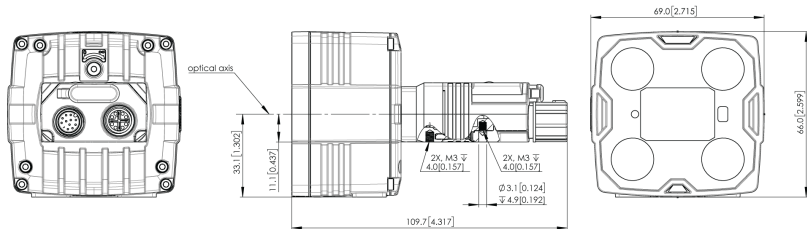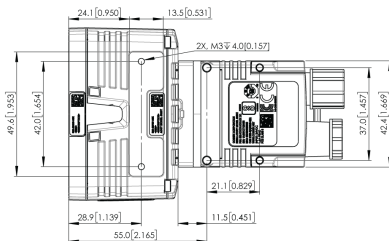
In-Sight 2800 with Multi Torch - Right Angle Configuration

The following image shows the dimensions of In-Sight 2800 equipped with L-Shaped extension and Multi Torch.
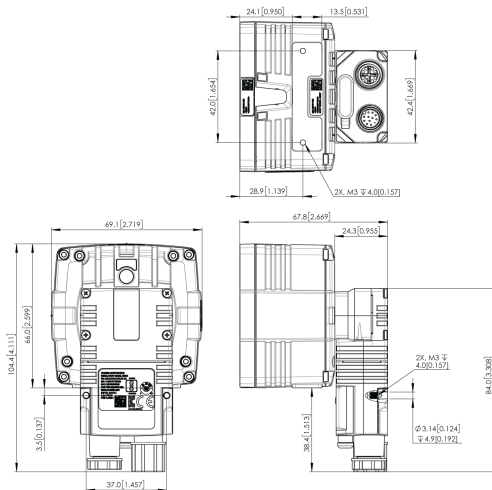
Field of View and Working Distance

This section discusses the Field of View values for the IS2800 with Multi Torch and IS2800 Mini configurations. (*On the diagrams, the values at the top are in mm and the values at the bottom of the top values in the brackets are in inch*).

In-Sight 2800 with Multi Torch and 12 mm Lens
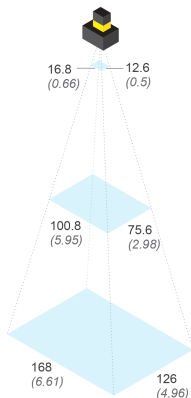
	Working Distance	Horizontal FOV	Vertical FOV
Minimum	50 mm (1.97 in)	16.8 mm (0.66 in)	12.6 mm (0.5 in)
Midpoint	300 mm (11.8 in)	100.8 mm (5.95 in)	75.6 mm (2.98 in)
Maximum	500 mm (19.69 in)	168 mm (6.61 in)	126 mm (4.96 in)

In-Sight 2800 with Multi Torch and 16 mm lens
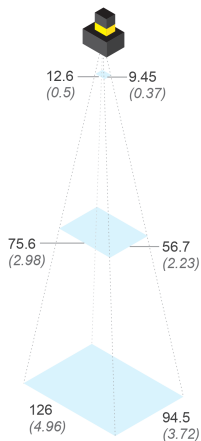
	Working Distance	Horizontal FOV	Vertical FOV
Minimum	50 mm (1.97 in)	12.6 mm (0.5 in)	9.45 mm (0.37 in)
Midpoint	300 mm (11.8 in)	75.6 mm (2.98 in)	56.7 mm (2.23 in)
Maximum	500 mm (19.69 in)	126 mm (4.96 in)	94.5 mm (3.72 in)

In-Sight 2800 Mini with 6.2 mm Lens
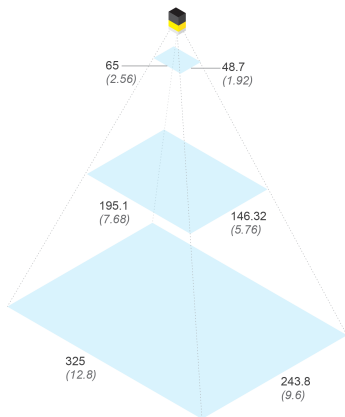
	Working Distance	Horizontal FOV	Vertical FOV
Minimum	50 mm (1.97 in)	65 mm (2.56 in)	48.7 mm (1.92 in)
Midpoint	300 mm (11.8 in)	195.1 mm (7.68 in)	146.3 mm (5.76 in)
Maximum	500 mm (19.69 in)	325 mm (12.8 in)	243.8 mm (9.60 in)

In-Sight 2800 Mini with 16 mm Lens
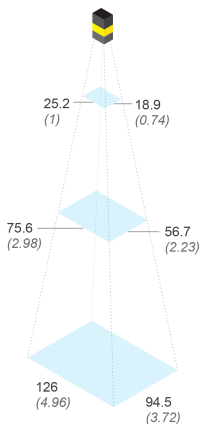
	Working Distance	Horizontal FOV	Vertical FOV
Minimum	100 mm (3.94 in)	25.2 mm (1 in)	18.9 mm (0.74 in)
Midpoint	300 mm (11.8 in)	75.6 mm (2.98 in)	56.7 mm (2.23 in)
Maximum	500 mm (19.69 in)	126 mm (4.96 in)	94.5 mm (3.72 in)

Mounting the Vision System

The vision system provides mounting holes for attachment to a mounting surface.

⚠️ **CAUTION**: The vision system has to be grounded, either by mounting the vision system to a fixture that is electrically grounded or by attaching a wire from the vision system's mounting fixture to frame ground or Earth ground. If a ground wire is used, it has to be attached to one of the four mounting points on the back plate of the vision system and not to the mounting points on the front of the vision system.
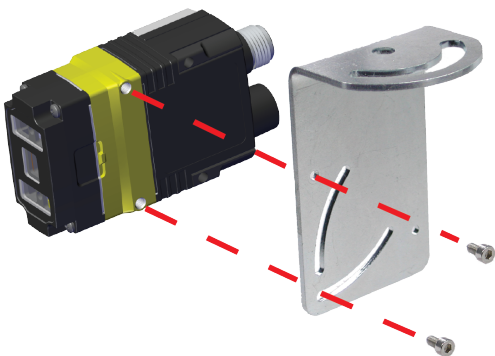
Align the holes on the mounting surface with the mounting holes on the vision system. Insert the M3X3.5 screws into the mounting holes.

Note:
Mounting the In-Sight 2800 at a slight angle (15°) reduces reflections and improves performance of the vision system.

ⓘ
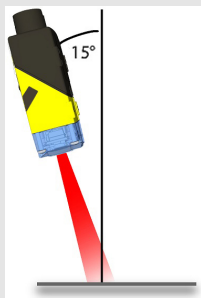
Connecting the Ethernet Cable

⚠️ **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 system ENET connector.
2. Connect the Ethernet cable's RJ-45 connector to a switch/router or PC, as applicable.

ⓘ **Note**: Besides powering the vision system 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.
IS2800 Mini configurations support PoE connection. The Multi Torch configuration does not 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 system 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 +24VDC wire.

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

Specifications

The following sections list general specifications for the vision system.

In-Sight 2800 Series Vision System

Specification	2800
Weight	6.2 mm: 141 g 16 mm: 169 g Right angle configuration adds 50 g
Power	24 VDC +/- 10%, USB 5V 500mA
24 V Supply	24VDC ± 10% LPS or NEC class 2
	Power consumption without USB device attached: • Average ≤ 5 W using High-Powered Light • Average ≤ 6 W using High Frequency High-Powered Light • Peak ≤ 1.6 A using internal illumination
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.
Shock (Shipping and Storage)	IEC 60068-2-27: 1000 shocks, semi-sinusoidal, 11g, 10ms ISTA-1A Standardized Testing - Packaged Products 150lb 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/s2 / 15mm) FedEx Vibration Testing for packaged products 150 lbs or less

In-Sight 2800 Series Vision System Image Sensor

Specification	Model
Image Sensor	1/3-inch CMOS, global shutter
Image Sensor Properties	Diagonal size: 6.17 mm Pixel size: 2.8 μm^2
Image Resolution (pixels)	1440 x 1080 (1.6mp) 720x540 (SVGA)
Electronic Shutter Speed	Minimum exposure: 29 µs Maximum exposure: 10 ms (with internal illumination) Maximum exposure: 200 ms (with external illumination)
Image Acquisition at Full Resolution	Up to 45 Hz
Lens Type	Multi Torch: • Manual focus: 16 mm, 12 mm • Autofocus: 16 mm (High Speed Liquid Lens), 12 mm (High Speed Liquid Lens) IS2800 Mini: • Autofocus: 6.2 mm, 16 mm

LED and Laser Wavelengths

The following table shows LED types and the related peak wavelengths.

Model	LED	Wavelength
In-Sight 2800 Mini 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.)
	Blue	465 nm
	Red	617 nm
	IR	820 nm

In-Sight 2800 with Multi Torch Illumination	Multicolor	• 453 nm (blue)
		• 525 nm (green)
		• 625 nm (red)
		• Color temperature: 6740 Kelvin (white) Chromaticity coordinates acc. to CIE 1931
		    • Cx 0.31 (typ.)
		    • Cy 0.32 (typ.)

Regulations and Conformity

> **Note**: For the most current CE declaration and regulatory conformity information, see the Cognex support site: cognex.com/support.

In-Sight vision systems have Regulatory Model numbers 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 2800 1.6 MP: Regulatory Model 50208 In-Sight2800 1.6 MP L-shaped: Regulatory Model 50210 In-Sight2800 2 MP: Regulatory Model 50215 In-Sight2800 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.
FCC	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.

Safety and Regulatory	
Korea	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-Sight2800 1.6 MP: R-R-CGX-50208 In-Sight2800 1.6 MP L-shaped: R-R-CGX-50210 In-Sight2800 2 MP: R-R-CGX-50215 In-Sight2800 2 MP L-shaped: R-R-CGX-50216
TÜV	In-Sight2800 1.6 MP: Regulatory Model 50208 In-Sight2800 1.6 MP L-shaped: Regulatory Model 50210 In-Sight2800 2 MP: Regulatory Model 50215 In-Sight2800 2 MP L-shaped: Regulatory Model 50216
	NRTL: TÜV SÜD AM SCC/NRTL OSHA Scheme for UL/CAN 61010-1.
	CB report available upon request. TÜV SÜD AM, IEC/EN 61010-1.
UK	Regulatory Model 50208 Regulatory Model 50210 Regulatory Model 50215 Regulatory Model 50216

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

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。

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。

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。

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.