

High-Performance Vision Sensors

In-Sight 5400 and 5100 machine vision sensors are the highest performance models of the industry-leading family of In-Sight vision sensors. These rugged vision sensors are equipped with a full library of proven Cognex vision tools designed to handle a wide range of vision tasks including part location, measurement, identification, and assembly verification in many industries. The unique vision spreadsheet and easy-to-use In-Sight Explorer software make application development and network administration of these sensors fast and simple.

Unequaled Speed

The In-Sight 5400 and 5100 set new standards for vision sensor performance. The In-Sight 5400 provides up to seven times the processing power of high-performance In-Sight 4000 models; the 5100 offers up to three times the performance of the popular In-Sight 1000 model.

In addition to powerful processing, the In-Sight 5400 and 5100 vision sensors acquire up to 60 full frames per second, with high-quality 8-bit images. And, with partial acquisition, it is possible to acquire even faster when a full image is not required.

The increased processing and acquisition performance maximizes the number of vision tasks per inspection cycle, and ensures that the In-Sight 5400 and 5100 will keep pace with increasing production line speeds and changing vision needs.

As with other In-Sight vision sensors, the In-Sight 5400 and 5100 include a full library of Cognex vision tools for unmatched vision performance. The library provides image processing and analysis tools, including PatFind™, a powerful supertool for locating parts under challenging conditions. All tools are based on the same robust vision technology found in more than 200,000 Cognex vision systems in use worldwide.

Rugged, Die-Cast Aluminum Design

Incorporating a die-cast aluminum housing and sealed industrial M12 connectors, the In-Sight 5400 and 5100 are rated for shock and



The rugged 5400 and 5100 In-Sight vision sensors provide unmatched performance, reliability, and ease of use. Where wash-down or dust protection is not required, the provided lens cover need not be used.

vibration to IEC specifications. When used with the included lens cover, the sensor achieves an IP67 (NEMA 6) rating for dust and wash-down protection on the factory floor. By eliminating the need for additional enclosure hardware, In-Sight 5400 and 5100 vision sensors make integration easier and more cost-effective.

Vision Made Easy

The In-Sight 5400 and 5100 are bundled with In-Sight Explorer software, which combines easy development of vision applications with efficient administration of a vision sensor network. By addressing all aspects of vision sensor implementation in a single, easy-to-use package, In-Sight Explorer reduces the cost of ownership and speeds the deployment of vision applications onto the factory floor.

As with all networked In-Sight vision sensors, these models are 10/100 Base-T Ethernet enabled, and offer multiple discrete I/O options. This provides easy communication with other In-Sight vision sensors and with devices on the factory network. Networked In-Sight vision sensors streamline system integration by facilitating remote control, monitoring, and management of vision sensor activity, as well as access to real-time vision data.

Advantages

- ▶ Highest-performance models of the In-Sight vision sensor family
- ▶ Full library of proven Cognex vision tools
- ▶ Sealed IP67 (NEMA 6) rated lens cover protects against the factory environment
- ▶ Industrial M12 connectors provide rugged, sealed connections
- ▶ Shock- and vibration-rated for reliable operation
- ▶ Ease-of-use In-Sight Explorer software simplifies sensor management and reduces cost of ownership

Specifications

Firmware	
	In-Sight version 2.52 and later
Memory	
Job/Program	16MB non-volatile flash memory; Unlimited storage via remote network device
Image processing	64MB
Image	
Sensor	1/3-inch CCD (5.84 x 4.94mm 6mm diagonal) 640 x 480 pixel display (307,200 sq. pixels, 7.4 x 7.4µm) Electronic shutter speed: 32µs to 1000ms
Acquisition	Rapid reset, progressive scan, full-frame integration 256 gray levels (8 bits/sec) Gain/Offset controlled by software Up to 60 frames per second (exposure dependent)
Lens type	C-mount
I/O	
Trigger	1 opto-isolated, acquisition trigger input Remote software commands via Ethernet and RS232
Voltage	ON 20 to 28V (24V nominal) OFF 0 to 3V (12V nominal threshold)
Current	ON 0.9 to 1.3mA OFF <150µA Resistance ~22,000 Ohms
Delay	250µSec latency between leading edge of trigger and start of acquisition. Input pulse should be minimum of 1ms wide.
Discrete inputs	8 inputs available, using optional Model 1450 I/O Expansion Module. Unlimited inputs using optional Ethernet I/O Module
Discrete outputs	2 built-in, high-speed outputs 8 additional outputs available, using optional Model 1450 I/O Expansion Module. Unlimited inputs using optional Ethernet I/O Module

I/O (cont.)	
High-speed output	
Voltage	28V maximum through external load
Current	200mA maximum sink current OFF state leakage current 200µA maximum External load resistance 120 to 10K Ohms Each line rated at a maximum 200mA, protected against over-current, short circuit, and transients from switching inductive loads. High current inductive loads require external protection diode.
Status LEDs	Power, Network Status, Network Traffic, 2 user configurable
Communications	
Network	1 Ethernet port, 10/100 BaseT, TCP/IP protocol. Supports DHCP (factory default) or static IP address
Serial	1 RS-232C port (1200 to 115,200 baud rates. 1200 and 2400 baud is not supported by the Model 1450 I/O Expansion Module.)
Power	
Power consumption	24VDC ± 10%, 350mA
Mechanical	
Material and finish	Die-cast aluminum housing, painted
Mounting	Eight M4 threaded mounting holes (four front and four back)
Dimensions	84mm (3.34 in) x 124.7mm (4.91 in) x 61.6mm (2.43 in) with lens cover installed 41mm (1.62 in) x 124.7mm (4.91 in) x 61.6mm (2.43 in) without lens cover installed
Weight	297.6 g (10.5 oz) lens cover installed, w/o lens
Environmental	
Operating temperature	0°C to 45°C (32°F to 113°F)
Operating humidity	95%, non-condensing
Storage temperature	-30°C to 80°C (-22°F to 176°F)
Storage humidity	95%, non-condensing
Protection	IP67 (NEMA Type 6) with lens enclosure installed
Shock	80 Gs (800 M/S ² at 11 ms) per IEC 68-2-27 EA
Vibration	10 Gs (10- to 500 Hz at 100 M/S ² / 15mm for two hours in each axis) per IEC 68-2-6 FC
Certifications	
Approvals	CE, CUL, FCC

Note: Measurements are provided in millimeters. Numbers in parenthesis are in inches.

