# Specifications

The following sections list general specifications for the vision system.

## Vision System Specifications

| Specifications | 8200 | 8400 | 8401 | 8402 | 8405 |
|---|---|---|---|---|---|
| Minimum Firmware Requirement | In-Sight version 5.2.0 | | | | In-Sight version 5.1.1 |
| Job/Program Memory | 512MB non-volatile flash memory; unlimited storage via remote network device. | | | | |
| Image Processing Memory | 512MB SDRAM | | | | |
| Sensor Type | 1/1.8 inch CMOS, global shutter | | | | 1/2.5 inch CMOS, rolling shutter |
| Sensor Properties | 9mm diagonal, 4.5 x 4.5µm sq. pixels | | | | 7.13mm diagonal, 2.2 x 2.2µm sq. pixels |
| Maximum Resolution (pixels)[1] | 640 x 480 | | 1280 x 1024 | 1600 x 1200 | 2592 x 1944 |
| Electronic Shutter Speed | 14µs to 520ms | | 17.4µs to 750ms | 20µs to 940ms | 32µs to 1000ms |
| Acquisition | Rapid reset, progressive scan, full-frame integration. | | | | |
| Bit Depth | 256 grey levels (8 bits/pixel). | | | | |
| Frames Per Second[2] | 60 full frames per second. | 217 full frames per second. | 76 full frames per second. | 53 full frames per second. | 10 full frames per second. |
| Lens Type | C-Mount | | | | |
| Trigger | 1 opto-isolated, acquisition trigger input. Remote software commands via Ethernet. | | | | |
| Discrete Inputs | None. | | | | |
| Discrete Outputs | 2 opto-isolated, NPN/PNP high-speed output lines. | | | | |
| Status LEDs | Network, 2 user-configurable. | | | | |
| Network Communication | 1 Ethernet port, 10/100/1000 BaseT with auto MDIX. IEEE 802.3af TCP/IP Protocol. Supports DHCP, static and link-local IP address configuration. | | | | |
| Serial Communication | None. | | | | |
| Power | Class 2 Power over Ethernet (PoE) device. | | | | |
| Power Type | PoE Type A and Type B. | | | | |
| Power Consumption | 6.49 W maximum per Class 2 PoE. | | | | |
| Current | Per Class 2 PoE requirements. | | | | |
| Voltage | 48VDC nominal, applied from a Class 2 PoE injector, which is typically powered from some other voltage. | | | | |
| Material | Die-cast zinc housing. | | | | |
| Finish | Painted. | | | | |
| Mounting | Four M3 threaded mounting holes (1/4-20 and M6 mounting holes also available on accessory mounting block). | | | | |

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[1] The number of image sensor rows are configurable and can be set within the In-Sight Explorer software. Decreasing the number of rows will increase the number of frames per second acquired by the vision system. Refer to the AcquireImage topic in the *In-Sight® Explorer Help* file for more information.

[2] Maximum frames per second is job-dependent, based on the minimum exposure for a full image frame capture using the dedicated acquisition trigger, and assumes there is no user interface connection to the vision system.

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|---|---|---|---|---|---|
| Dimensions | 31.0mm (1.22in) x 31.2mm (1.23in) x 75.1mm (2.96in) without accessory mounting block. 39.0mm (1.54in) 31.2mm (1.23in) x 75.1mm (2.96in) with accessory mounting block. | | | | 31.0mm (1.22in) x 31.2mm (1.23in) x 71.6mm (2.82in) without accessory mounting block. 39.0mm (1.54in) x 31.2mm (1.23in) x 71.6mm (2.82in) with accessory mounting block. |
| Weight | 132.2 g (4.66 oz.) without accessory mounting block 163.2 g (5.76 oz.) with accessory mounting block | | | | 78 g (2.75 oz.) without accessory mounting block 109 g (3.84 oz.) with accessory mounting block |
| Case Temperature[1] | 0°C to 50°C (32°F to 122°F) | | | | |
| Storage Temperature | -20°C to 80°C (-4°F to 176°F) | | | | |
| Humidity | < 80% non-condensing | | | | |
| Protection | IP40 with cables and lens attached. | | | | IP30 with cables and lens attached. |
| Shock (Shipping and Storage) | IEC 60068-2-27: 18 shocks (3 shocks in each polarity in each (X, Y, Z) axis) 80 Gs (800 m/s2 at 11 MS, half-sinusoidal) | | | | |
| 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) | | | | |
| Regulations/Conformity | CE, FCC, KCC, TÜV SÜD NRTL, RoHS | | | | |

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[1] Case temperature can be verified using the EV GetSystemConfig("Internal.Temperature") Extended Native Mode command. When issued, it returns the vision system's internal temperature in degrees Celsius, which will be ±5 degrees above the vision system case temperature. Refer to the *In-Sight® Explorer Help* file for more information. Additional cooling measures are required if the case temperature cannot be kept below 50°C. Examples of such measures include: mounting the vision system to a heat sink using the M3 mounting screws, reducing the ambient temperature and ensuring there is air flow over the vision system.