Imaging Diagnostics
Total vision solutions

Fast USB2 digital camera
With stackable card design
& Embedded DSP Capability

INTRODUCTION

IDM-500 is a family of digital cameras for machine vision applications with a fast USB2 connection and an embedded digital signal processor that is capable of performing advanced image processing algorithms on the camera, on the fly. The IDM-500 is capable of storing a buffer of images on the camera without needing to send all of the images to the PC. These powerful yet compact cameras are intended for medical and industrial applications requiring superior image quality and high performance, and yet are priced attractively.

IDM-500 Series Features

- Ultra compact design
- Board level option
- C-CS/Mount and Micro lens support
- Internal LED support
- Various resolutions
- External trigger support
- Sub resolutions
- Configurable ROI
- Electronic shutter
- Controllable Gain
- On board 128MBit SDRAM
- On board 1Mbit Flash
- DirectShow Interface
- Software Development Kit
- USB Powered
- Hi Sensitivity

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On Camera Processor Board

- 400 MHz Analog Devices Blackfin® DSP
- 16 Mbyte SDRAM
- 1 Mbit Serial Flash
- Programmable

Communications Interface

- USB2 high speed (480Mbps)

Power Source

- USB or 5VDC

Connectors

- JTAG–Female 10 pin single row 1.27mm pitch
- µUSB–Cable connection
- GPIO-5 pin connector Molex Pico-Clasp, 1mm, 1x5 pins - board to wire connector

GPIO Connector

The GPIO connector on the Main board uses a 5-pin plug.

Molex PN: 5019390500

Pin	Signal
1	GPIO1
2	GPIO2
3	GPIO3
4	GPIO4
5	GND

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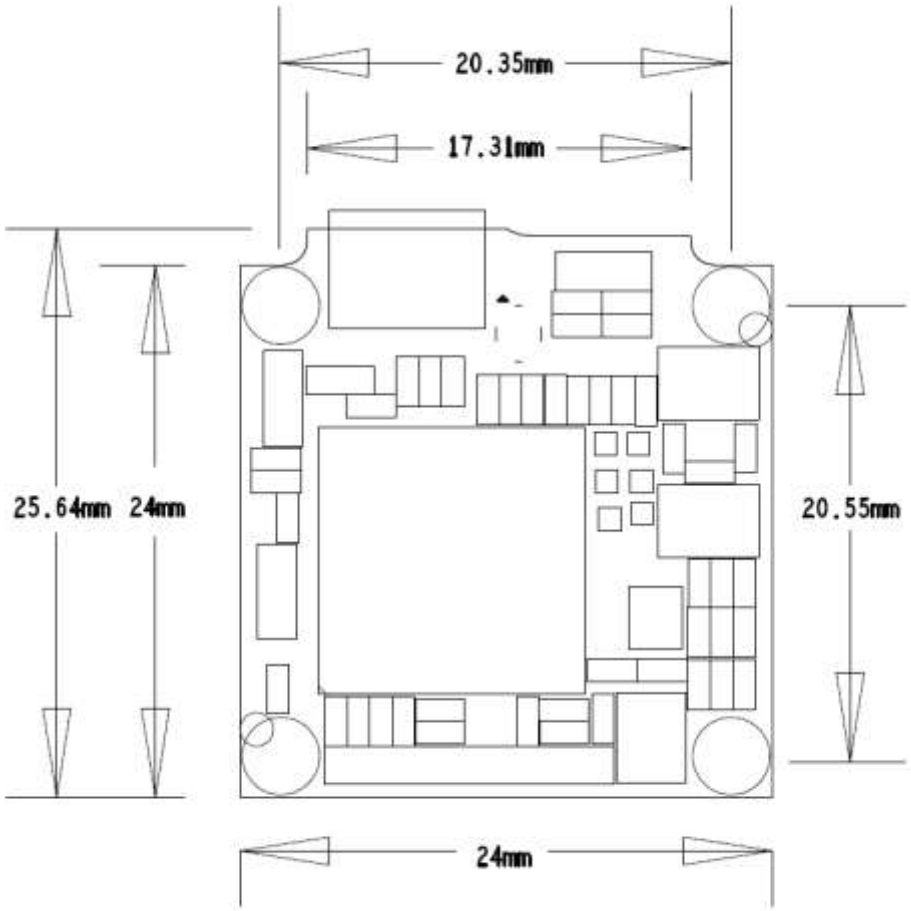
Physical Characteristics

Main Board Physical Dimensions



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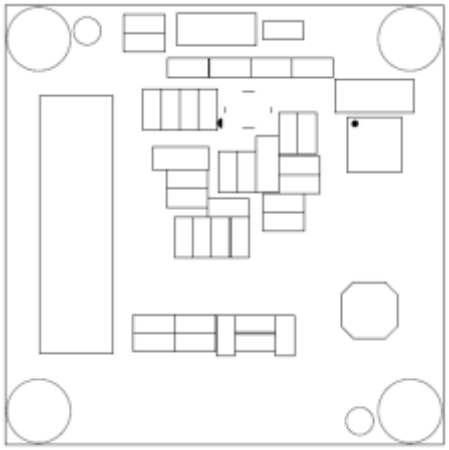
WVGA Model



The WVGA sensor board is based on the Aptina sensor MT9V024 True-Snap with global shutter capability.

The sensor board can include 4 LEDs, each with a separately controlled programmable current source up to 30mA (current sink).

There is also an optional connector for an external illumination source instead of the on-board LED's.

Item	Description or Value
Sensor	Aptina MT9V024
Resolution	WVGA
Optical Format	1/3-inch
Active Image Size	4.51mm (H) x 2.88mm (V) 5.35mm diagonal
Active Pixels	752H x 490V
Pixel Size	6.0 x 6.0µm
Color Filter Array	Monochrome or color RGB Bayer pattern
Shutter Type	TrueSNAP™ Global shutter
Maximum Data Rate	27 MHz
Frame Rate	60 fps
Full Resolution	752 x 480
ADC Resolution	10-bit-on-chip. Board can work in either 10 bit or 8 bit.
Responsivity	4.8V/lux-sec (550nm)
Dynamic Range	>55dB Linear >100dB in HDR mode
Power Consumption	160mW
LEDs	Four 0603 LEDs on board.
LED Drivers	Four separated controlled LED Drivers-programmable current source up to 30mA.

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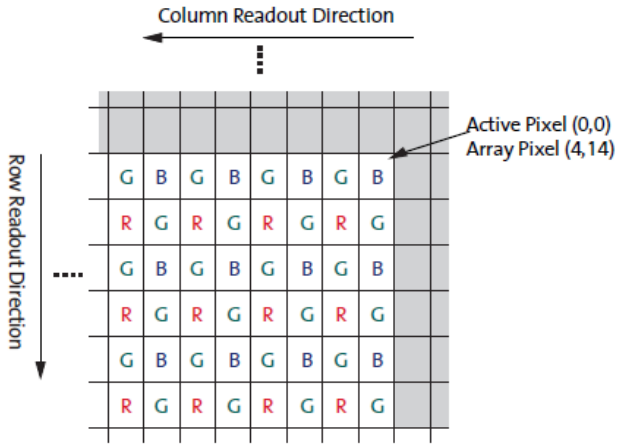
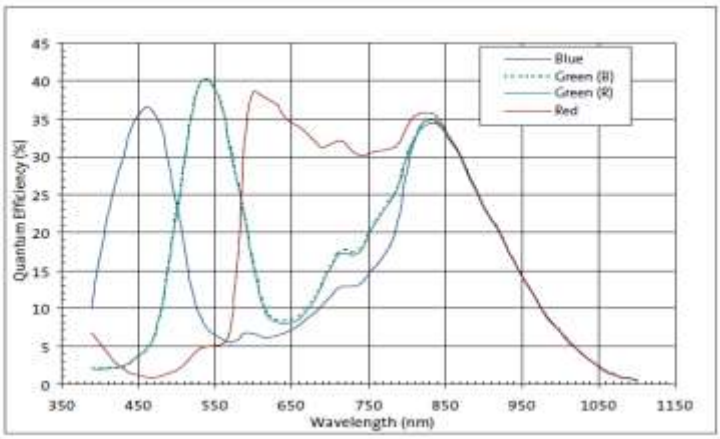
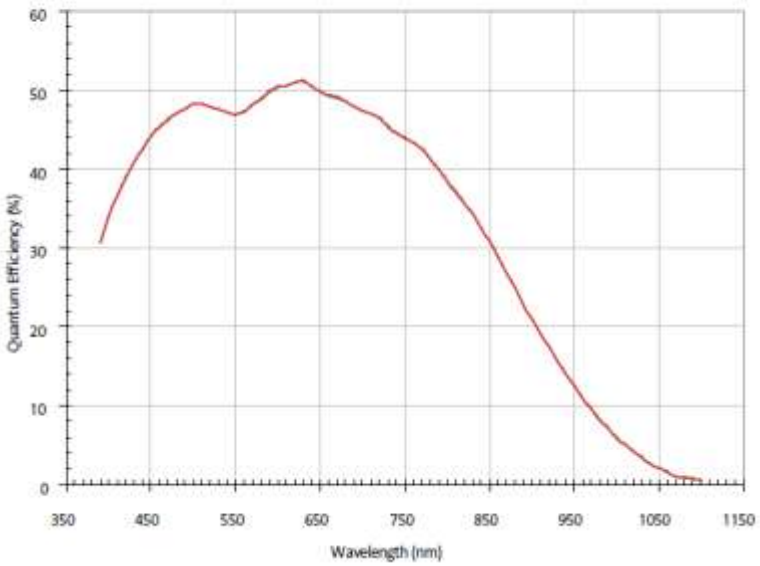
Pixel Color Pattern Detail (Top Right Corner)



Typical Quantum Efficiency—Color



Typical Quantum Efficiency—Monochrome



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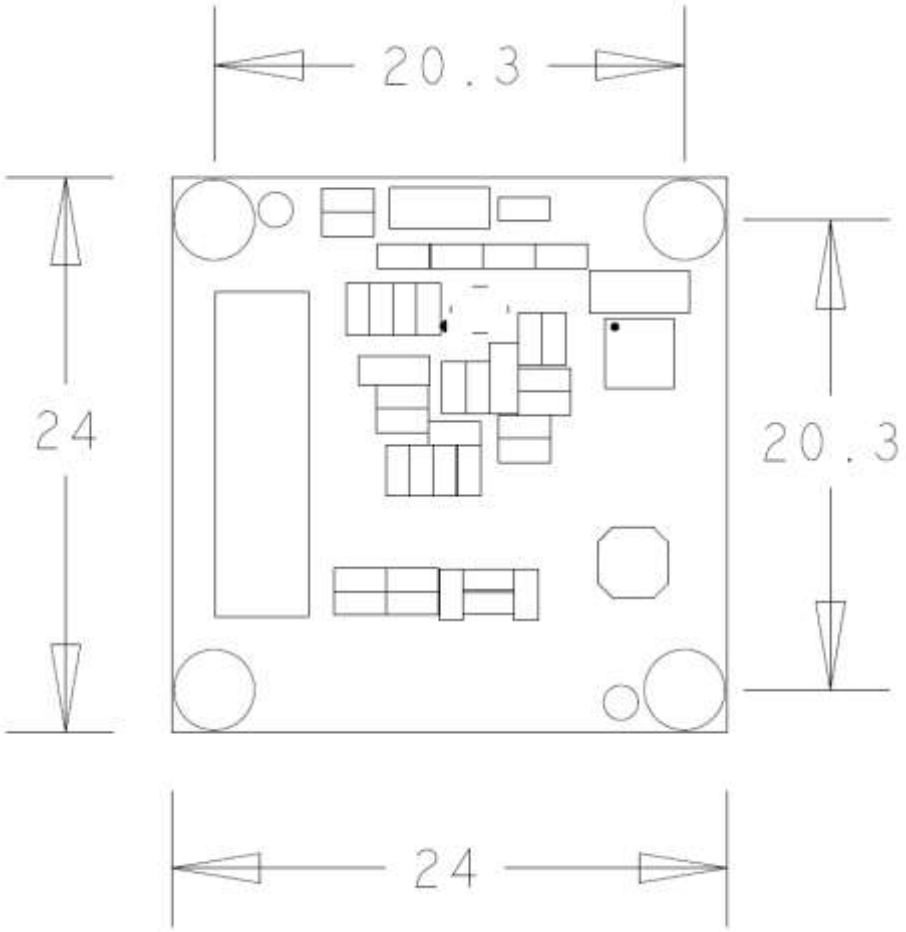
Board dimensions



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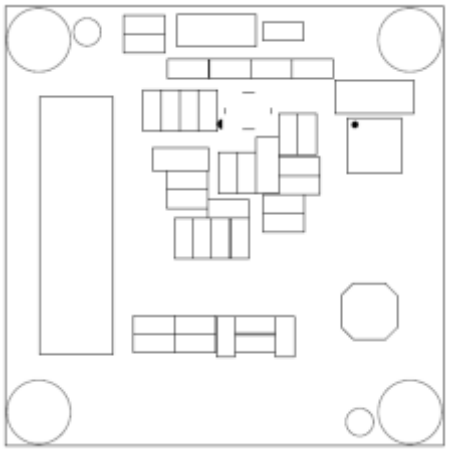
5M Pixel Model



The 5Mpixel sensor board is based on the Aptina sensor MT9P031 that incorporates sophisticated camera functions on-chip, including snapshot mode.

The sensor board can include four LEDs each with a separately controlled programmable current source up to 30mA (current sink).

There is an optional connector for external illumination instead of the on board LED's.

Item	Description or Value
Sensor	Aptina MT9P031
Resolution	5Mpixel
Optical Format	1/2.5-inch (4:3)
Active Image Size	5.7mm (H) x 4.28mm (V) 7.13mm diagonal
Active Pixels	2,592H x 1,944V
Pixel Size	2.2 x 2.2µm
Color Filter Array	RGB Bayer pattern
Shutter Type	Electronic rolling shutter (ERS) Snapshot only Global reset release (GRR)
Maximum Data Rate	96 Mp/s at 96MHz
Frame Rate	14 fps
ADC Resolution	12-bit-on-chip. Board can work in either 12 bit or 8 bit.
Responsivity	1.4V/lux-sec (550nm)
Pixel Dynamic Range	70.1db
SNR Max	38.1db
Power Consumption	381mW
LEDs	Four LEDs on board.
LED Drivers	Four separately controlled LED Drivers-programmable current source up to 30mA (current sink).

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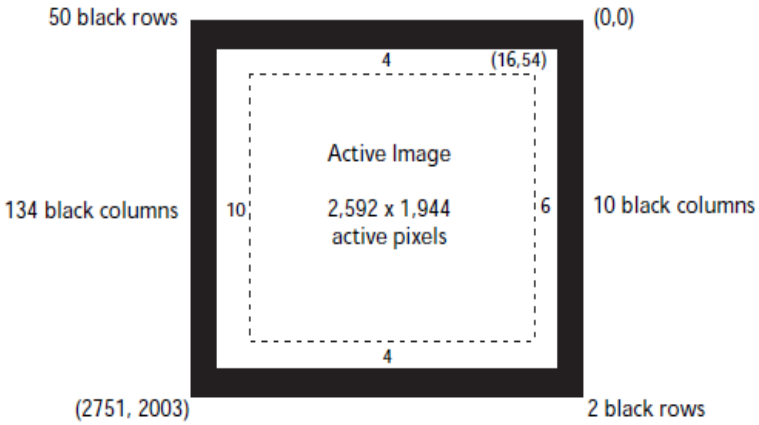
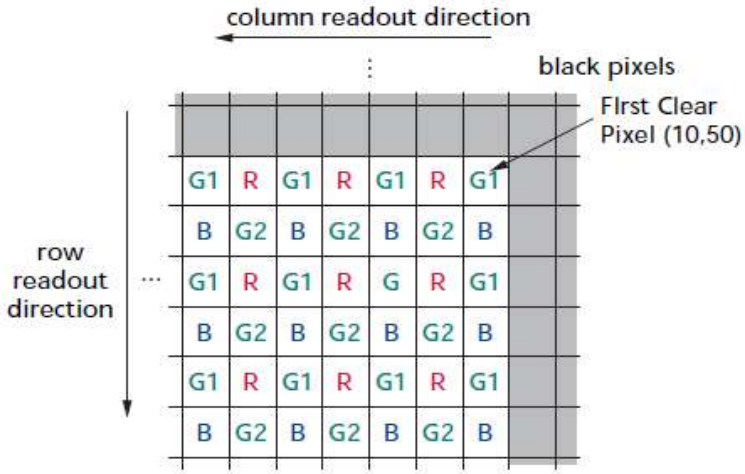
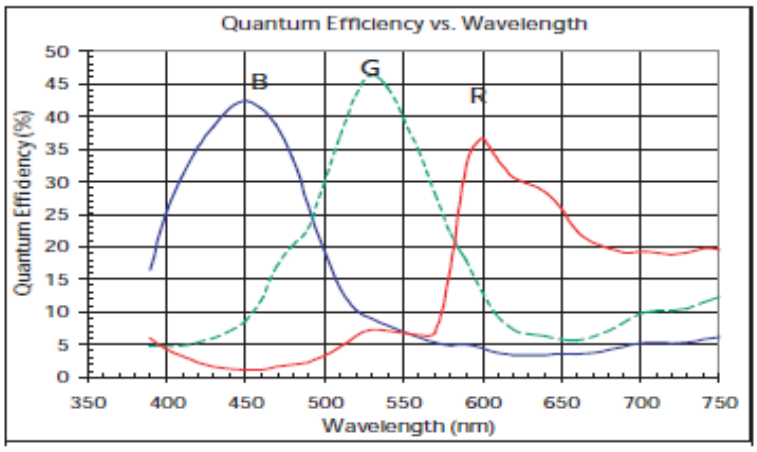
Pixel array description



Pixel Color Pattern Detail (Top Right Corner)



Typical Spectral Characteristics



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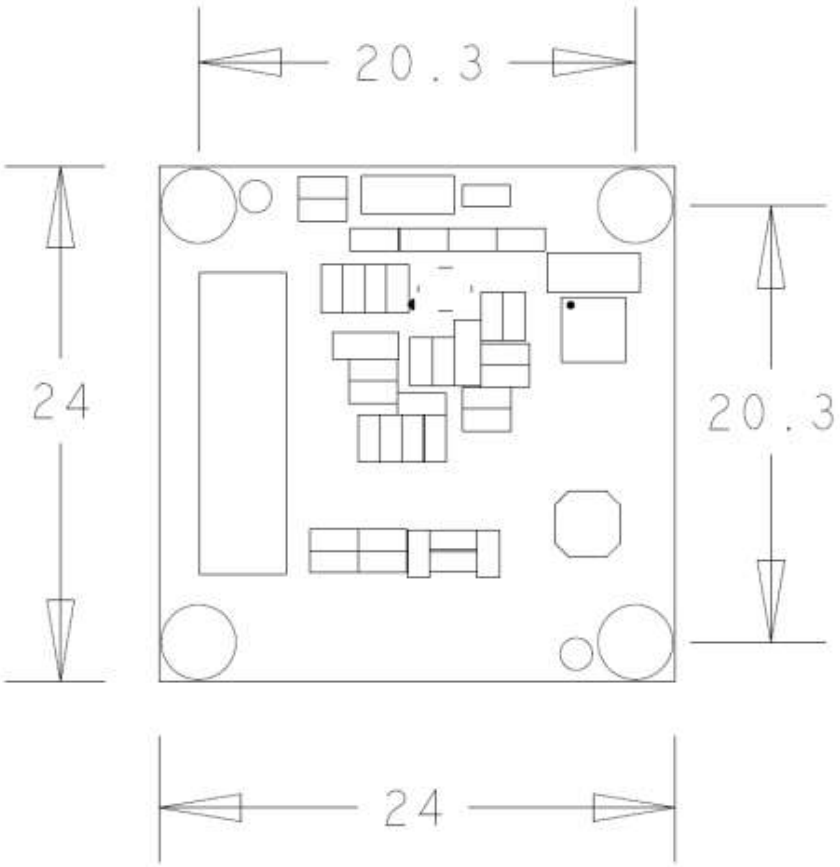

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HOW TO CONTACT US

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