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Intelligent Video Applications

With Liquid Lens by **varioptic**  
A drop of genius of genius

## IVIN™-2M USB 2.0

Intelligent Video Input, 1600 x 1200 Progressive Scan,  
with USB 2.0 and *Varioptic Liquid Lens Focus*

### Product Overview

The IVIN-2M USB 2.0 is a progressive scan, 1600x1200 resolution, 1/3", YUV color, or monochrome, digitally interfaced board camera.

The IVIN-2M directly interfaces to a host computer using the USB 2.0 bus.

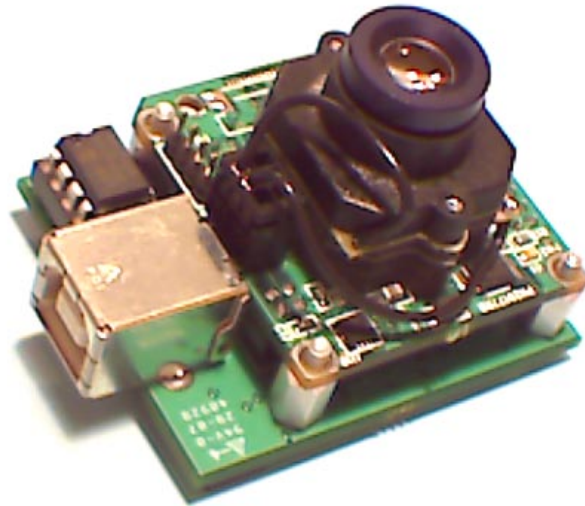
Measuring 39mm by 47mm, the IVIN-2M is a very low power, high performance CMOS image acquisition device. Images are acquired using progressive scan (as opposed to interlaced scanning, which often introduces field-to-field motion artifacts) at up to 30 Frames Per Second.

Electronic rolling shuttering is used to implement auto-iris functionality, and/or to eliminate motion artifacts.

Manual or auto gain, exposure, and white balance may be programmably selected in order to optimize the imager analog output to the input range of the 10-bit A/D converter(s).

Output resolution is independent of input window, so digital zooming is possible. For example the entire 1600x1200 field of view can be digitally filtered/zoomed down to a 640x480 output, and the size and position of the input field can be varied all the way down to a 640x480 window anywhere within the 1600x1200 field of view, thus achieving 2.5:1 electronic zoom with no loss of precision.

The optional *Varioptic Liquid Lens* focus mechanism allows close-up to infinity focus control done completely electronically with no moving parts. The nominal focus distance at power-up may be specified at order time. The user has complete real-time control over focus during operation, and in addition, the power-up default focus may be changed by the user and stored in on-board non-volatile memory, thus allowing post-installation "tuning" to be done to eliminate any mechanical adjustments once the device has been installed.



### Applications

- Biometrics (excluding iris identification due to contractual agreements)
- Surveillance, Warning Systems
- Security Systems
- Vision Applications
- General Image Processing

### Imager Specifications

- Raw Resolution 1600 x 1200 pixels
- Pixel Size 2.8um x 2.8um
- Image Size 4.73mm x 3.52mm
- Frame Rate 30 FPS max at 640x480 output (including full 1600x1200 field zoomed down), or 15FPS for full 1600x1200 output, may be affected by host USB performance.
- Sensitivity 1.0V/Lux-sec
- S/N Ratio >42 dB
- Dynamic Range >71 dB



# IVIN<sup>TM</sup>-2M USB 2.0

Intelligent Video Input, 1600 x 1200 Progressive Scan,  
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## Mechanical/Electrical

- Printed circuit motherboard/daughterboard, 39mm by 47mm with 4x #2 mounting holes at corners, 0.25" mounting height with standard hex standoffs.
- Standard M12 x 0.5 lensholder for non-liquid lens version.
- Liquid lens version uses custom lens/lensholder.
- USB 2.0 Interface.
- Low power, supplied by USB.
- Complete control of on-board camera functions over USB via I2C serial control interface

## Lens Information

Hi-res lenses have MTF's compatible with the 1600x1200 sensor. Standard resolution lenses are also available for higher magnification applications and greater depth-of-field fixed focus applications. Other non-standard focal lengths may also be available, check with factory.

**Hi-res lenses** offered for use with the IVIN-2M, with or without liquid lens focusing are as follows:

- 5.6 mm f2.0 (dig zoom 5.6mm - 14mm)
- 8.0 mm f2.0 (dig zoom 8mm - 20mm)
- 12.0mm f2.0 (dig zoom 12mm - 30mm)
- 16.0mm f1.2 (dig zoom 16mm - 40mm)

**Standard resolution lenses** offered for use with the IVIN-2M are as follows. Note that higher f numbers allow more depth of field.

- 16.0mm f2.5 or f7.0
- 25.0mm f2.5 or f3.55 (not currently usable with liquid lens)
- 35.0mm f2.0 or f4.0 (not currently usable with liquid lens)

## Software

A standard Windows application is provided which includes the following functions:

- Acquire live video to screen using hardware video overlays
- Set video size, clock rate, USB transfer mode, color or monochrome.
- For liquid lens equipped cameras, adjust focus (with slider), Autofocus.

The supplied USB 2.0 driver allows operation in either Bulk or Isochronous transfer modes, and is able to operate the USB bus at its maximum performance.

Low level camera interace software and drivers are also available for custom user applciations.

## Ordering Information

A standard evaluation kit including camera with tripod mount, hi-res lens, Varioptic liquid lens, USB cable, and software CD is immediately available. The order code is:

IVIN-2MUSB-x.xHRL

where x.x may be 5.6 (for 5.6mm hi-res lens) or 8.0 (for 8.0mm hi-res lens). See separate Ordering Information guide for other configuration information.