



Intelligent Video Applications



A drop of genius

IVIN™-UVC

IVIN5M/2M, IVIN5ME/2ME

Intelligent Video Input, USB Video Class Camera with optional *Varioptic Liquid Lens Focus*

Product Overview

The IVINxx-UVC is a progressive scan, color or monochrome, USB 2.0 camera, offered in several versions to accommodate the needs of virtually any imaging application.

Two resolutions are offered: 5 megapixels (2592x1940 max resolution, 1/2.5" sensor), and 2 megapixels (1600x1224 max resolution, 1/4" sensor), and both color and monochrome sensors are available. A standard two-board version (shown in the photo to the right) supports USB type B or Mini USB cables, while an embedded single-board version supports direct attachment to a PCB or header-type cable.

Many lens choices are available, and an optional integrated *Varioptic Liquid Lens* focus mechanism provides close-up to infinity focus electronically with no moving parts. The user has complete manual or auto real-time control over focus during operation.

The IVINxx-UVC is a USB Video Class device, supported on Microsoft Windows XP, Vista, and Windows 7, both 32 and 64 bits. The standard Windows USB Video Class device driver fully supports the camera when used with the supplied DirectShow filters. DirectShow programming support is provided, including example programs with source code in both C++ and C#. All necessary system software and drivers except for the supplied DirectShow filters are standard Windows software components included with the standard OS release. The provided DirectShow filter takes the IVCM format (IVA Lossless Compressed) data and converts it to high quality RGB24 or monochrome data, at frame rates and resolutions exceeding that normally available with USB cameras.

Flash illumination support is also available. One flash option utilizes Super Capacitor technology, so even with this high intensity flash, no external power is required other than that provided over a



single USB cable. A direct-drive connection is also available to directly power pulsed or continuous LED illumination at a lower illumination level. The camera automatically adjusts gain/exposure/white balance for the flash picture, then reverts to alternate values appropriate for live video.

Auto gain, exposure, and white balance are standard, with complete manual control if desired. The camera may be operated in either landscape mode, or in portrait mode for optimal face captures.

Applications

- Face Portraits/Mug Shots
- Biometric recognition
- Surveillance, Warning Systems
- Vision Applications (monochrome version available)

Base Models

- IVIN5M-UVC standard, IVIN5ME-UVC embedded, -COL or -MON, up to 2592 x 1940 landscape, 1940 x 2592 portrait
- IVIN2M-UVC standard, IVIN2ME-UVC embedded, -COL or -MON, up to 1600 x 1224 landscape, 1224 x 1600 portrait



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Imager Specifications

- 5M, Max Resolution 2592 x 1940 pixels
- 2M, Max Resolution 1600 x 1224 pixels
- Pixel Size 2.2um x 2.2um
- Frame Rate See Res./Rates section
- Sensitivity 1.4V/Lux-sec
- S/N Ratio >42 dB
- Dynamic Range >71 dB
- 12-bit sensor data mapped through user-loadable 12-in-8-out lookup table

Mechanical

- 1.45" square by approximately 1.25" deep depending on lens (shown in photo.)
- Optional extruded aluminum enclosure 1.75" w, 4" h, 1.95" d with standard 1/4"x20 threaded tripod mount for version with optional Super Cap flash, approx. 10 oz, and 1.75" w, 1.75" h, 1.95" d with standard 1/4"x20 threaded tripod mount for version without optional Super Cap flash, 8 oz
- **IVIN5ME/2ME** is a single board, same dimensions as above except 0.26" less depth

Electrical

- USB 2.0 Interface
- **IVIN5M/2M**: Type B connector or optional Mini-B connector or optional 2mm spacing header/wire-type connector
- **IVIN5ME/2ME**: 0.05" spacing header/wire-type connector or 30-pin SMD connector for 5mm board spacing direct PCB mount
- Low power, supplied by USB. 200ma typical during live video preview, with momentary peaks of 350ma typical if the optional Super Cap Flash is present and recharging.
- Full support for **USB Suspend Mode** on Windows Vista and Windows 7, reduces power consumption to <1ma typical when camera is idle (Windows XP usbvideo.sys does not activate suspend mode).

(Electrical continued)

- The Windows XP standard usbvideo.sys driver does not currently support USB Suspend Mode. An alternate low-power mode for Windows XP reduces camera power to approx. 35ma under program control, camera automatically returns to standard power operation upon use.

Environmental

- Operating temp. range 0 to 60c (with liquid lens)
- Operating temp. range 0 to 70c (without liquid lens)
- Storage temp. range -40 to 85c (with or without liquid lens)

Resolution/Frame Rates

All resolutions may be acquired in landscape or portrait mode, landscape modes are shown below, swap dimensions for portrait modes.

IVIN5M/ME:

- 648 x 480, 30Hz, 45Hz (with zoom 2x, 4x, pan/tilt)*
- 800 x 612, 20Hz (with zoom 2x, pan/tilt)
- 960 x 720, 20Hz, 30Hz (with zoom 2x, pan/tilt)
- 1280 x 720, 20Hz, 30Hz (with zoom 2x, pan/tilt)**
- 1284 x 960, 15Hz (with zoom 2x, pan/tilt)
- 1600 x 1224, 10Hz (with pan/tilt)
- 1920 x 1080, 10Hz (with pan/tilt)***
- 1920 x 1440, 8Hz (with pan/tilt)
- 2592 x 1940, 4.5Hz

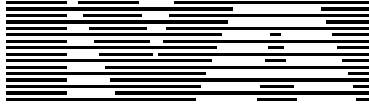
IVIN2M/ME:

- 648 x 480, 30Hz, 45Hz (with zoom 2x, pan/tilt)*
- 800 x 612, 20Hz (with zoom 2x, pan/tilt)
- 960 x 720, 20Hz, 30Hz (with pan/tilt)
- 1280 x 720, 20Hz, 30Hz (with pan/tilt)
- 1284 x 960, 15Hz (with pan/tilt)
- 1600 x 1224, 10Hz

* 45Hz mode actually run at 60Hz for 2x or 4x zoom

** Note that 1280 x 720, 30Hz is also known as "720p 30Hz"

*** Note that 1920 x 1080, 10Hz is also known as "1080p 10Hz"



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Lens Information

Hi-res lenses available for the IVINxx-UVC are as follows. Approx. FieldOfView (FOV) for 5MPix sensor, W x H for landscape mode at 3 foot subject distance, swap W and H for portrait mode, FOV for 2MPix sensor approx. 60% of 5MPix values:

- 5.1 mm f2.8*, FOV 36" x 27", order code - 5.1HR
- 7.5 mm f2.8, FOV 23" x 17", order code -7.5HR
- 12.0mm f2.0, FOV 17" x 13", order code -12HR
- 16.0mm f1.2, FOV 12" x 9", order code -16HR
- CS Mount also available, order code -CS

Hi-res Lenses with Optional Varioptic Liquid Lens electronic focus available for the IVINxx-UVC are as follows, same comments as above regarding FOV:

- 5.1 mm f2.8*, FOV 36" x 27", order code - 5.1HRLL
- 7.5 mm f2.8, FOV 23" x 17", order code - 7.5HRLL
- 12.0mm f4, FOV 17" x 13", order code - 12HRLL

*The 5.1mm lens produces the widest field of view but crops the corners of some formats when used with the **5MPix** sensor, no cropping occurs with the 2MPix sensor. For the 5MPix sensor, 648x480 zoom 1x, 1284x960 zoom 1x, and 2592x1940 are corner-cropped. Other formats and zooms will exhibit cropping with the 5MPix sensor only if pan/tilted to the image corners.

Optional Integrated Flash

An integrated flash option is available for the IVIN5M/2M (but not for the IVIN5ME/2ME). The flash utilizes Super Capacitor technology, so even with this high intensity flash, no external power is required other than that provided over the single USB cable. The camera automatically adjusts gain/exposure/white balance for the flash picture, then reverts to alternate values appropriate for live video. The flash is suitable for taking pictures in total darkness, or as a fill flash to insure consistent color quality under variable lighting conditions. Order code - SCF (Super Cap Flash).

The IVIN can also be provided with optional cabling to direct-drive an LED illuminator for lower-intensity illumination applications, a maximum current of approx. 250ma may be supplied either as continuous illumination, or still-capture flash. The photo below shows the camera installed in the optional enclosure with the SuperCap flash (-SCF-ALF).





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IVINxx-UVC Hi Res Color/Mono Camera Ordering Info

Base Camera Version (select one)

Order Code	Item Designation
IVIN2M-UVC	USB Video Class, 2MPix, two boards: sensor head, USB interface
IVIN5M-UVC	USB Video Class, 5MPix, two boards: sensor head, USB interface
IVIN2ME-UVC	USB Video Class, 2MPix, single board
IVIN5ME-UVC	USB Video Class, 5MPix, single board

Color/Monochrome

-COL	Color (default if not specified)
-MON	Monochrome

Lens/Mount Options (select one)

-5.1HR	5.1mm, M8x0.35 mount
-5.1HRLL	5.1mm, M8x0.35 mount, liquid lens
-7.5HR	7.5mm, M8x0.35 mount
-7.5HRLL	7.5mm, M8x0.35 mount, liquid lens
-12HR	12mm, M12x0.5 mount
-12HRLL	12mm, M12x0.5 mount, liquid lens
-16HR	16mm, M12x0.5 mount
-CS	CS mount, no lens or IR cut filter
-NOIR	To EXCLUDE IR cut filter from -COL cameras (except CS mount, which has none)
-IRCUT	To ADD IR cut filter to -MON cameras (except CS mount, which has none)

Additional Options for IVIN5M/2M

-SCF	Supercap Flash with cable
-LPF	Low Power Flash with cable
-ALC	Aluminum Case with tripod mount
-ALF	Aluminum Case with tripod mount with space for SCF or LPF Flash

OEM Connector/Cable Options for IVIN5M/2M

-MINIB	Horizontal USB MiniB connector instead of standard USB-B vertical
-HRR	Hirose right angle wire-type DF3 connector 2mm spacing
-HRV	Hirose vertical wire-type DF3 connector 2mm spacing
-HDR	Vertical header posts 2mm spacing
-CBL-xxFT	Specify to add cable with mating connector, xx feet (max 6) with Type A USB to host

OEM Connector/Cable Options for IVIN5ME/2ME

-SMD	SMD 30-pin board-to-board connector
-HRR	Hirose right angle wire-type DF13 connector 0.05" spacing
-HRV	Hirose vertical wire-type DF13 connector 0.05" spacing
-HDR	Vertical header posts 0.05" spacing
-CBL-xxFT	Specify to add cable with mating connector, xx feet (max 6) with Type A USB to host