

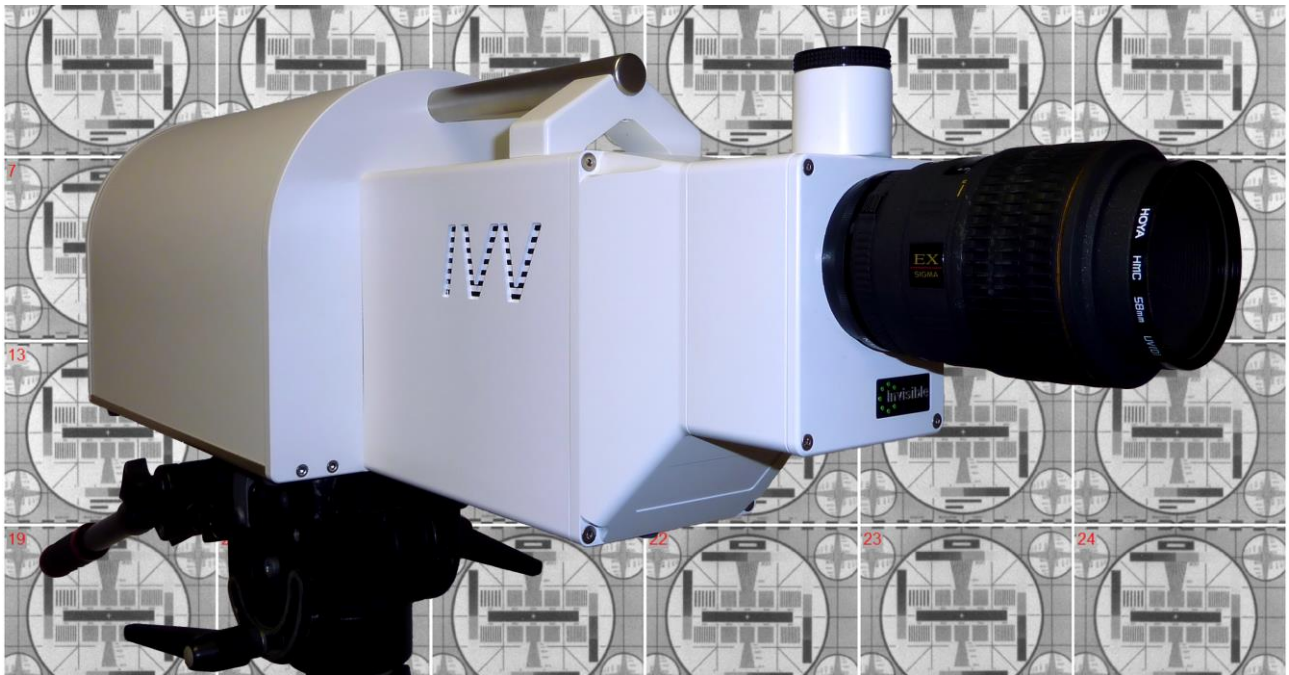


Making the invisible visible

UBSi

True 1 Billion FPS Ultra High Speed Framing Camera

The Invisible® Vision Ultra UBSi series of compact ultra high speed framing cameras are designed to capture up to 24 mega-pixel performance frames at speeds up to and beyond a true 1 Billion frames per second (optically calibrated exposures to 1ns). The cameras are derivatives of the UHSi camera system but with enhanced timing capabilities and optimized shuttering for the accurate imaging of the very fastest events. Currently available in two models either as a fully optimized straight 12 frame camera for maximum sensitivity or as 12 and 24 frame system (utilizing a faster but less efficient phosphor with a small timing gap between frames 12 and 13 for phosphors to decay). Each model has fully independent user programmable exposure and inter-frame time delays down to 1ns allowing true frame rates to 1 Billion fps (internal exposure timing calibrated on 10ps boundaries). Fully intensified with simple input electrical triggering, output shutter monitor and programmable electrical strobe timing outputs gives the user maximum flexibility.



At the heart of the Ultra UBSi is a unique high resolution beam-splitter with optional UV capability. This is complimented with an *Ultra* 'segmented' intensifier and 16M pixel GigE linked CCD. Together with flexible proven control and timing electronics plus powerful system software they combine to form an elegant, reliable, yet cost effective 1 billion frame per second ultra-high speed imaging system.

Typical applications are in combustion, electric discharge, detonics, impact, somi-luminescence, fluoroscopy, shock physics and high energy material studies.

The Ultra UBSi is easily controlled with the included IVV Imprint® PC software running on a laptop via a GigE connection. For ease of use, an optical viewfinder is also available to aid set-up and alignment. Simplicity being a virtue, the camera provides a simple single 50Ω input trigger as well as a manual software trigger mode. Four programmable output strobes plus a shutter monitor are provided for external synchronization of further cameras, experiment triggering and flash systems.

The Ultra UBSi 12/24

- 1 Billion FPS
- Up to 24 Frames
- Megapixel Performance
- UV Versions Available

Intensifier

Input Window
Photocathode

Custom Design, Patented.
Glass (UV option available on Sapphire).
S25, 400nm to > 850nm (S20 UV option).
S25 typically > 300µA/lumen (white light).
Typically set to maximum of 5000.

Gain

Optics

Input
Beam-splitter
View-finder

Custom Design, Patented.
Standard Nikon F-mount.
Bespoke, 12+ way, visible with UV option. f/2.
Automatic optical viewfinder / capping shutter.

CCD

Pixels
Dynamic Range

4872 (h) x 3248 (v) with 7.4µm pixels
65dB – Digitized to 12 bit

System

Frames
Resolution
Timing / Trigger Jitter

12 + 12 (12 images @ 1Bn fps + further 12 @ 1Bn fps).
24 Frames @ 1000 x 860 pixels per image.
Fast Timing Jitter for frames from trigger typically 130ps.
200MHz (5ns period) system clock.
Trigger jitter to system clock ± 2.5ns.

Framing Rate
Exposures (Optically Calibrated)
Delays

1Bn fps (1,000,000,000 fps)
1ns to > 1ms in 1ns steps.
From Input Trigger : 160ns to > 10ms in 1ns steps.
Interframe times : 0 to > 1ms in 1ns steps.
10µs nominal between frames 12 and 13 (May be adjusted).

Gain Control
Triggering
Outputs

User programmable 0 to 100% (10 bits).
50Ω BNC TTL/5V Positive.
1 x Shutter Monitor Output (50Ω BNC)
1 x User Programmable TTL Gate monitor. 5ns timing steps
4 x User Programmable TTL 'strokes'. 5ns timing steps
Gigabit Ethernet (1000Mb/sec - GigE) direct to PC.

Interface

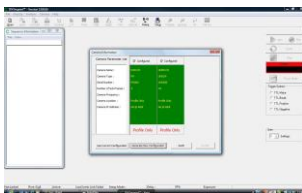
Environmental

Dimensions (excluding objective lens)
Weight (excluding objective lens)
Power
Temperature
Construction
Mounting
Documentation and Software
Packaging
CE and RoHS (Pb free)

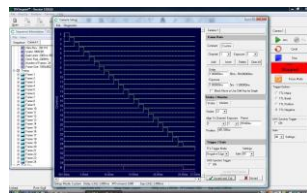
210mm (wide) x 255mm (height) x 755mm (long)
16.5Kg (36 lb - avoirdupois pounds)
120W max (90-264VAC).
0°C to 40°C, non-condensing humidity.
Solid aluminium housing with large carrying handle.
2 x 3/8-16 UNC thread on base (Standard Tripod Mounts).
Supplied on CD.
Heavy duty IP65 flight box.

Software

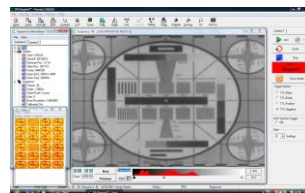
IVV Imprint[®] PC software as standard. Software seamlessly allows for full multi-camera control, capture, image analysis and file export for all current IVV camera types.



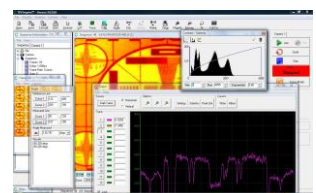
CONFIGURE



TIMING



CAPTURE



ANALYSE

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