



DRS's Imacon 200 — the most advanced and sophisticated ultra high-speed digital imaging system in the world — is a dual use commercial/military ultra high-speed digital imaging system based on multiples of intensified CCD modules. More than a decade of extensive testing and performance improvements have resulted in the Imacon 200 being the only system available today with optional streak optics providing simultaneous framing and streak recording through a single optical axis.

The Imacon 200 has high spatial and temporal accuracy plus flexible software operation providing the user a versatile recording system ideally suited for ultra fast events. Framing rates are programmable from 1000 to 200 million frames-per-second (fps.)

This unit provides more flexibility through its use of a Nikon® Bayonet 'F' style lens mount allowing for a variety of lenses, microscopes and custom optical applications. A unique feature of the system involves fiber optic synchronization and control of two cameras for applications in 3-dimensional and stereo imaging.

The Imacon 200 joins other DRS camera systems widely accepted in universities, government facilities and commercial institutions whose uses include projectile/target impact studies, plasma discharge imaging, experiments using Hopkinson's bar, stress analysis and biomedical testing.

(top) Spheromak Formation  
Argon, Images taken at 50 Million fps,  
5 nanosec Exposures.  
(Courtesy: Paul Bellan, Cal Tech)

Bullet Impact  
308 Caliber, Velocity 2400 ft/sec,  
Images taken at 200,000 fps, 50 ns exposures.  
(Courtesy: Arun Shukla, Dynamic  
Photomechanics Lab URI)

DRS DATA & IMAGING SYSTEMS, INC.



## Features

- Simultaneous framing and streak
- 1360 x 1024 pixel resolution per frame
- 10-bit CCD sensor
- 1,000 - 200,000,000 frames per second
- 5 ns - 2 ms exposure time per frame
- Multiple exposures per frame
- 200 Mb/s fiber optic data link
- Built-in focus monitor
- Full control and analysis software
- Dual-camera synchronization for 3D imaging

## Optical

|                    |   |
|--------------------|---|
| Number of channels | Variable, up to 16 frames                     |
| Optical input      | Single input beam splitter with internal iris |
| Lenses             | SLR Nikon® mount                              |
| System aperture    | f2  |
| Capping shutter    | Electro mechanical                            |

## Intensifier / CCD

|               |   |
|---------------|---|
| Intensifier   | Gated high resolution 18 mm MCP f/o coupled |
| Photocathode  | S20/S25                                     |
| Gain          | Up to 2000X in 10 steps                     |
| Resolution    | 1360 x 1024 pixels per frame                |
| Pixel size    | 6.45 $\mu$ m sq.                            |
| Dynamic range | 10 bits                                     |

## Timing Parameters

|                         |                               |
|-------------------------|-------------------------------|
| System clock            | 200 MHz                       |
| Inherent delay          | 50 ns                         |
| Exposure times          | 5 ns to 2 ms in 5 ns steps    |
| Interframe times        | 5 ns to 1 ms in 5 ns steps    |
| Delay to first exposure | 50 ns to 100 ms in 5 ns steps |
| Preflash timings        | 1 $\mu$ s to 1 ms             |
| Framing rates           | Up to 200,000,000 fps         |
| Slow streak window      | 100 ns to 1 ms                |
| Fast streak window      | 10 ns to 1 $\mu$ s            |
| Number of exposures     | Up to 6 exposures per frame   |

## Input / Output Signals

|                      |   |
|----------------------|---|
| Triggers             | 2-50V +/-, make/break 50 or 1 K Ohms, TTL |
| Monitor pulses       | Width and position user programmable      |
| Preflash output      | TTL into 50 Ohms pulse width 1 $\mu$ s    |
| Streak monitor pulse | 5V edge into 50 Ohms                      |

## Dimensions

|        |                |
|--------|----------------|
| Length | 640 mm         |
| Width  | 325 mm         |
| Height | 500 mm         |
| Weight | 28 kg (62 lbs) |

Specifications subject to change without notice.

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