



NESSIE

Infrared Scene Projector System Platform

KEY APPLICATIONS

- Hypersonic Scene Projection
- Target Signature Simulation
- Infrared Sensor Testing
- Radiometric Calibration



The CDS Infrared LED Scene Projector System is a complete IR scene projector designed to test IR sensors and FPAs. The core principle of the projector platform is to push the boundaries of IR sensor testing requirements using hypersonic frame rates, high resolutions, and hot apparent temperatures. The complete projector platform includes everything from the Graphical User Interface (GUI) used to control the full system down to the LED emitters connected to our in-house Read-In Integrated Circuit (RIIC) called Moch. The end-user can utilize CDS's flexible platform to request a system built around their needs, including wavelengths (MWIR, LWIR, UV; single-band or dual-band), projector resolution (512x512, 1Kx1K, 2Kx2K), and more.

KEY FEATURES

- Full-Array Frame Rates up to 500 Hz
- Novel PDP Playback solution for Sub-Window Frame Rates up to 20,000 Hz
- 2400 Kelvin maximum apparent temperature
- 16-bit array resolution
- Automated Non-Uniformity Correction
- LED Duty Control hardware solution for improved efficiency in synchronous systems
- Flash mode for low-latency hardware-in-the-loop operations
- PING projector control user interface for easy-to-use operation

Hypersonic Frame Rates

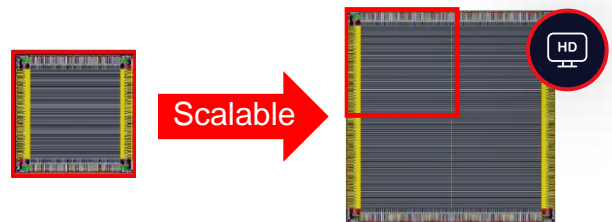
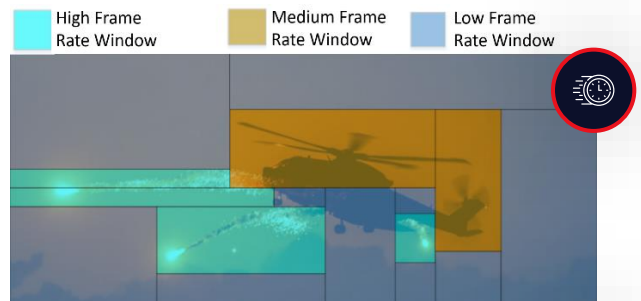
- LED emitters rise times, and custom firmware/hardware allow the system to reach full-array frame rates of 500Hz
- Novel Packetized Display Protocol (PDP) sends small sub-windows of data at a faster apparent frame rate
- Small sub-windows maintain support for full resolution modes of operations and can reach up to 20 KHz frame rate
- PDP sub-windows provide the capability to display small, fast-moving objects over a slow-moving background

Scalable Resolution

- Moch RIIC design uses radical stitching to achieve a scalable design
- Resolutions available from 64x64 to 2048x2048, with the potential to go higher
- Native dual-band arrays available at double the physical size of single-band arrays of same resolution

Hotter Temperatures

- High apparent temperature for displaying hot objects with full-frame backgrounds
- 16 bits of resolution, multiple gears for broad dynamic range
- 30mK temperature resolution for high precision, high contrast imagery





CUSTOMIZABLE OPTIONS

LED Wavelengths

- Mid-Wave Infrared
- Long-Wave Infrared
- Ultraviolet
- Dual-band projector systems

Display Resolutions

- 64x64
- 512x512
- 1024x1024
- 2048x2048

Projector Packaging

- Pour-filled Dewar
- Cryostat
- Cryogenic chamber

AVAILABLE SERVICES

**FLIR Camera
Integration for
Calibration and
Evaluation**

**Scene
Generator
Integration
Development**

**Custom
Optics for
Unique
Solutions**

**Sensor Testing
Support**

**System
Rentals**

CDS MWIR SINGLE-BAND PROJECTOR SPECIFICATIONS

System Overview		Electronics Specifications (NESSIE 1)	
Emission Band	2-5 microns (center band selectable)	System Clock Speed	200 MHz
Emission Width	500um – 2500um	IO Bandwidth	12.6 Gbps (CDS IO) 15.0 Gbps (External IO)
Emitter Resolution	1024 x 1024 Pixels	Data Interface	Dual HDMI
Dynamic Range	16-bit DAC Dual gears Variable dynamic range	PC Interface (CDS IO)	GPU (Quadro M4000)
Maximum Frame Rate (Full Array)	500 Hz	NUC Computation	GPU
Maximum Frame Rate (32x2 Pixel Movable Sub-window)	20,000 Hz	Synchronization	Quadro Sync Card
Array Specifications (projected specs for EIRE arrays)		Case Dimensions	17" x 24" x 11"
LED Operability	> 99%	Case Weight	27 pounds
Pixel Pitch	24 microns	Packaging Specifications	
Maximum Apparent Temperature	700 Kelvin (weak gear) 2400 Kelvin (strong gear)	Pour Filled Dewar Dimensions	7" x 7" x 14.875" (min) 7" x 7" x 16.25" (max)
Emitter Rise Time	25 nanoseconds	Pour Filled Dewar Weight	16 pounds
Optional Features			
		Non-Uniformity Correction (NUC)	Integrated NUC

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