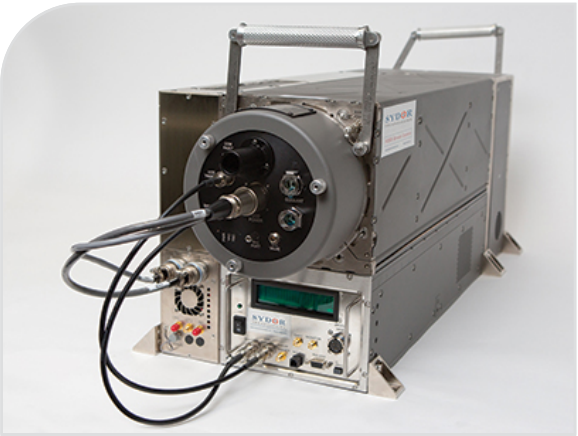
ROSS 5800 Streak Camera System



The Sydor ROSS 5800 provides the world's clearest large format streak camera images. This is done by pairing a Sydor exclusive streak tube with a low-noise, single photon sensitive readout camera. The large format, high clarity imaging allows more than 500 data points to be captured per image in both axes of time and space. The optional DynaCal Module allows in-situ streak camera calibration; ideal for systems mounted in a way that makes them difficult to access, harsh shock environments, or systems requiring frequent experimental adjustments. Together, these systems provide unparalleled performance, giving rise to measurements with precision within 1%

The ROSS 5800 streak tube has a number of unique properties, including:

- Dual-slot accelerating electrodes-minimizes the space-time astigmatism by tuning the voltages on the slots, allowing the streak tube to focus in both space and time simultaneously, without the typical tradeoff between temporal and spatial resolution.
- A curved phosphor- matches the focal plane curvature, resulting in improved image quality and temporal resolution towards the edges of the active image area.
- Optimized streak tube magnification-the 1.2x streak tube magnification has been specifically designed to match the readout camera supplied with the ROSS 5800.

All of Sydor's streak camera systems come with Sydor's ROSSApp software, designed with two user role interfaces; one for users and the other for engineering diagnostics. ROSSApp comes packed with features that control and monitor the streak camera's performance. Users can apply custom scripting for easy automation of repetitive tasks, including post-processing tasks. Some examples of ROSSApp's real-time image analysis capabilities include fitting, background subtractions and tube distortion corrections. Images are stored in standard formats for direct integration to common image analysis tools. Added features include software closed-loop voltage stability and graphical based scripting capability for task automation.

Sydor Technologies has experience in developing custom cameras, integrating customer-supplied materials, and providing vacuum-sealed airboxes. Inquire today!

Features:

- Simultaneous optimization of temporal and spatial resolution with Sydor exclusive streak tube
- World's cleanest streak camera imaging with focus maintained at image borders
- Ultimate sensitivity without using an MCP
- Ultra fast time resolutions below 5ps with >500 data points per image

Applications:

- **VISAR -** Large format and well focused image boundaries ensure clarity of Interferometric line pattern
- **Streaked Spectroscopy** - Custom coupling to spectrometers for state of the art spectroscopy configurations
- **Laser Induced Discharge** - Photocathode gating provides fast shuttering of unwanted light
- **Detonics -** Rugged in situ calibration for inaccessible environments

Product Specifications

Sydor Technologies

- **Trusted and proven supplier to major labs worldwide running critical experiments**
- **Inclusive support from our PhD support staff via telephone and email for the life of the system**
- **Factory calibration and QA of all systems for ultimate confidence in performance. Recommended operating parameters provided with every system**

Timing

- **Time resolution:** <5 ps
- **Repetition rate :** Up to 0.5 Hz
- **Sweep window timing configuration:** Every Sweep window duration is custom, for the best temporal resolution and total data acquisition duration optimized to a customer's experimental timing needs
- **Sweep window ranges:** See separate sweep window configuration diagram for options
- **Trigger jitter:** <25 ps
- **Photocathode gating:** Yes (as standard)
- **Number of sweep speeds per timing board:** 4-8 (depending on sweep duration chosen)
- **Trigger signals:** 5V TTL (50 Ohm)

Streak Tube Features

- **Number of data points resolvable per image (space axis):** >500
- **Number of data points resolvable per image (time axis):** >500
- **Photocathode materials:** S20B, Low Noise S20, S20 (others possible dependent on spectral response requirements)
- **Input windows:** Fused Silica, MgF2 or Sapphire
- **Accelerating electrode configuration:** Dual slot electrode architecture gives maximum electron through put and independent adjustment of electrode voltages gives optimum focal and temporal tuning
- **Tube magnification:** 1.2 (Optimized to pair with SI-800 CCD)
- **Phosphor design:** Curved to match curved focal plane
- **Image size on phosphor:** Approximately 27 mm
- **Sheilding:** Mu metal shielding (prevents EMC interference)
- **System gain:** >100 CCDe-/photoelectron
- **Dynamic range:** Better than 10,000:1 depending on sweep speeds
- **Static spatial resolution :** >10 Lp/mm at better than 70% contrast,with a spatially averaged contrast over the entire image of up to 70%
- **Dynamic spatial resolution:** >10 Lp/mm (at up to 70% contrast) at center of the image. Measured at sweep windows in the nanoseconds range

Input Options & Optics

- **Integrated fiber input (for timing fiducials or similar):** 2 as standard; design features inputs which do not block the optical path from the input to the cathode

Product Specifications

Input Options & Optics Continued

- **Spectrometer options:** Coupling to most spectrometers possible with recommended optional spectrometer interface modules allow precise alignment of spectrometer to streak camera
- **Ofner input optics:** As standard the system uses all-reflective optics to minimize chromatic aberrations
- **VISAR Optics:** VISAR Optics available on request
- **Slit adjustment:** Manual or motorized and calibrated adjustment of slit opening (minimum separation <50 µm)
- **Calibration Inputs:** DynaCal automated optical calibration module available

Readout Cameras

- **Camera options:** Liquid cooled Scientific CCD
- **Camera resolutions:** 2048 x 2048 or 4096 x 4096 (hardware binning possible to match tube resolutions and increase signal), camera dependent
- **Read noise:** Down to 4e- per pixel (depending on readout settings)
- **Pixel size:** 13 µm

PC & Software

- **Software:** ROSSApp software lifetime license included with system. Controls complete camera system either locally or remotely for acquisition and image processing
- **Calibration features:** Factory generated calibration files included at shipment, plus re-calibration options accessible in software
- **Power:** Standard mains supply (120/240 V)
- **Operating system:** Windows

ROSS 5800 Coupled to IsoPlane Spectrometer

Outline Dimensions