

## ROSS 2000 Streak Camera System

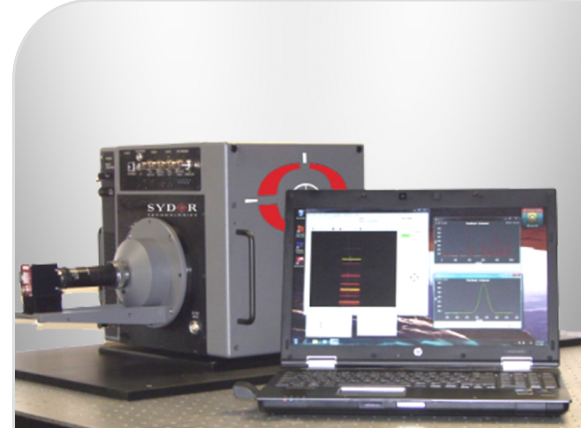
The ROSS 2000 Streak Camera System is engineered for facilities performing diverse experiments with a range of temporal requirements. The ROSS 2000 is customized for maximum temporal resolution and overall performance. This large photocathode system features built-in protections to minimize avoidable damage to both the streak tube and image intensifier.

When configuring a ROSS 2000, users are able to select up to 12 sweep speeds for each interchangeable sweep module, ranging from 500 ps to 1 ms—meeting the demand for versatility required at multi-user facilities. Other commercially available streak cameras offer pre-configured sweep electronics spanning a temporal range that may not be useful for certain applications. By designing sweep modules to the user's needs, performance is greatly enhanced. Additionally, each sweep module is compatible with Sydor's base system. This offers a great return on investment for multi-user facilities.

The 2000 series streak camera comes equipped with built-in features that prevent damage to the system's components. The system comes paired with Sydor's ROSSApp software which allows users to control the gain of the system's photocathode. This ensures that the light levels being detected will not over-expose and damage the image intensifier. Sydor's design employs gated image intensifiers with a <5 ms gate time pre-programmed to prevent saturation. The next built-in feature lies within the CCD shutter. By default, the shutter is set to be closed unless the CCD is actively capturing an image. Overall, these settings prevent damage to the image intensifier and/or CCD that can lead to burn-in and require repair or replacement of the entire streak camera system.

Sydor couples Offner input optics as standard to its ROSS 2000 Streak camera to remove chromatic aberrations, resulting in less interference compared to traditional refractive optics. The ROSS 2000 includes a timing periscope with an option to add a second for maximum confidence and traceability in experimental timings.

Each ROSS system comes bundled with the powerful ROSSApp software. ROSSApp employs an interface designed for basic users, with optional tabs and menus for more advanced users. The software includes image analysis control software and scripting capabilities. The software integrates all the streak camera functions, making for easy calibration and analysis.



### Features:

- ⊕ Custom sweep times to ensure the best possible resolution & complete data acquisition
- ⊕ Large format imaging provides flexibility to swap timing modules
- ⊕ User-friendly software interface with built-in processing functions and hardware controls
- ⊕ Factory calibration and QA of all systems for spatial and temporal distortions

### Applications:

- ⊕ Measurement of spatial-temporal or temporal-spectral information
- ⊕ Material characterization



# 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

- ⊕ **Swappable timing boards:** Yes (change boards in under 2 minutes)
- ⊕ **Time resolution:** <36 ps
- ⊕ **Number of sweep speeds per timing board:** 12
- ⊕ **Rep rate:** 1 Hz
- ⊕ **Sweep window timing configuration:** Custom to experiment
- ⊕ **Trigger jitter:** <25 ps
- ⊕ **Photocathode gating:** Extinction Ratio >10<sup>4</sup>; Delay <100 ns, Rise Time: <10 ns, Fall Time 30 ns
- ⊕ **MCP gating:** Extinction Ratio >10<sup>6</sup>, 3 ns FWHM @ 200 kHz
- ⊕ **Trigger signals:** 5 V TTL (50 Ohm)
- ⊕ **Master trigger options:** The user may supply a single trigger, which is then used to trigger all the other components of the system, such as sweeps, gating, shutter, and CCD, with the appropriate timing

## Key Features

- ⊕ **Large format imaging with hot-swappable timing cards for ultimate flexibility**
- ⊕ **Custom sweep timing modules for every System built:** Ensures best temporal resolution and total data acquisition duration are optimized to an experiment
- ⊕ **User friendly software:** ROSSApp simple and ROSSApp advanced user interfaces

## Streak Tube Features

- ⊕ **Photocathode materials:** S20B, Low Noise S20, S20 (others possible dependent on spectral response requirements)
- ⊕ **Photocathode size:** 18x3 mm
- ⊕ **Input windows:** Fused Silica, MgF2, or Sapphire
- ⊕ **Accelerating electrode configuration:** Single slot aperture - gives higher electron throughput than other mesh variants (mesh available if required)
- ⊕ **System magnification:** 0.4
- ⊕ **MCP:** Yes - single stage MCP with adjustable gain
- ⊕ **Shielding:** Mu metal shielding (prevents EMC interference)
- ⊕ **Static spatial resolution :** >10 Lp/mm



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## Input Options & Optics

- ⊕ **Integrated fiber input (for timing fiducials or similar):** Yes - 1 as standard (2 available on request); design features inputs which do not block the optical path from the input to the cathode
- ⊕ **Spectrometer options:** Coupling to most spectrometers possible with various options for focal lengths and multiple grating turrets with flip in mirrors
- ⊕ **Spectrometer coupling mechanics:** Yes - Optional spectrometer interface modules allow precise adjustment slit and spectrometer alignment
- ⊕ **Slit adjustment:** Micrometer for adjustment of slit opening between 50  $\mu\text{m}$  and 1 mm
- ⊕ **Calibration Inputs:** Bench top calibration equipment such as fiberised laser pulsers, MHz optical comb generators and resolution reticles available on request

## Readout Options

- ⊕ **Camera options:** High resolution machine vision camera general specs 5 MP, 3.45  $\mu\text{m}$  pixels, 14-bit AD
- ⊕ **Camera resolutions:** 2452x2056
- ⊕ **Read noise:** 5 e-
- ⊕ **Rep rate:** 9.2 FPS
- ⊕ **Pixel size:** 3.45  $\mu\text{m}$

## PC & Software

- ⊕ **Software:** ROSSApp software lifetime licence included with system. Controls complete camera system either locally or remotely for acquisition and image processing
- ⊕ **Burn in protection:** Integrated saturation and burn in protection in software setup
- ⊕ **Calibration features:** Calibration routines for spatial and temporal corrections. Systems are calibrated at the factory but customers can also update
- ⊕ **Interface:** Ethernet
- ⊕ **Power:** Standard mains supply (120/240 V)
- ⊕ **Operating system:** Windows

## Outline Dimensions

