PowerView™ HS-3000 Camera Model 630064

PowerView HS cameras…for time-resolved image capture in Global Imaging Measurements—only from TSI!

Features

- Image capture rates from 3,000 fps at full pixel resolution to 250,000 fps at reduced resolution
- Full 1024 × 1024 pixel resolution and 10-bit dynamic range
- Frame Straddling mode with microsecond inter-frame time for high speed flows
- High image capture rates and variable exposure times
- Integrated protective mask for the CMOS array
- Unsurpassed sensitivity equivalent to 6400 ISO/ASA
- Global electronic shutter to 2 µs
- Expandable memory up to 16 GB for long duration image capture
- Phase locked measurements with external trigger signal
- Designed for PIV, PLIF and Spray Diagnostics

Latest Generation Cameras

TSI initiated the use of cameras designed specifically for PIV applications when it introduced its PowerView™ PIV cameras. The PowerView HS series cameras, developed for time-resolved global imaging measurements, are the newest members of the PowerView family. The HS-3000 camera offers 3000 fps at the full pixel resolution of 1024 × 1024 pixels and up to 250,000 fps at reduced pixel resolution. These image capture speeds allow detailed temporal information to be taken in the measurement regions of interest.

Time-Resolved Measurements

For time-resolved PIV, the camera is operated in the frame straddling mode to allow two laser pulses in two consecutive frames for cross correlation analysis to obtain the velocity field. The time between the laser pulses can be as small as a few microseconds for high speed flow measurements.

For PLIF and spray diagnostics, the camera can be operated in the Triggered mode with variable shutter exposure to enable image integration from multiple laser pulses. The camera can be triggered externally, allowing phase locked measurements to be taken with external devices. The standard camera memory is 2.6 GB, but can be expanded to 16 GB to lengthen the image capture sequence.

TSI®

Protective Mask

The detector array, the sensitive and expensive part of the camera, has an integrated protective mask to protect the CMOS output circuitry from potential laser light reflections. This prevents fatal damage to the array, thereby improving camera reliability and extending camera life.

INSIGHT 3G™ Software

Detailed temporal and spatial statistics obtained globally offer unique information about flow dynamics, flow transport and the motion of structures in a flow. As part of TSI's Time-resolved PIV System, the *INSIGHT 3G* Image Capture, Analysis and Display Software offers unique capabilities for time-resolved global measurements. Through detailed analysis of time-series data, it provides higher order statistics, including correlations and spectra. Various MATLAB® software-based Toolboxes developed by TSI are included in the analysis tools for time resolved measurements. The Time Series toolbox gives detailed time and space domain analysis and display. The POD (Proper Orthogonal Decomposition) toolbox offers a method for extracting different scale modes in the flow and evaluating their contribution to energy and Reynolds stress.

System Configuration

The PowerView HS-3000 camera system includes the standard Nikon 50 mm lens and all related interface cables. Data transfer from the camera to the host computer is through the IEEE-1394 Firewire® interface. Two cameras can be configured for simultaneous PIV and PLIF applications.

Specifications

Model 630064 PowerView HS-3000 Camera

Imaging Device	CMOS array with 17 µm pixel size
Pixel Resolution	1024 × 1024 pixels
Pixel Size	17 µm (H) × 17 µm (V)
Image Size	17.4 mm (H) × 17.4 mm (V)
Intensity Dynamic Range	10-bit digitization, 8-bit output
Frame Rate (partial list)	

fps	Pixel resolution
3,000	1024 × 1024
10,000	512 × 512
30,000	256 × 256
70,000	128 × 128
150,000	128 × 48
250,000	128 × 16

Sensitivity	6400 ISO/ASA
Electronics Shutter	2 µs minimum
Phase Lock	Enables camera to be synchronized with external device
Protection Mask	Integrated protection mask for the CCD array output circuit
Lens Mount	F-mount
Operation Modes	Free Run, Triggered and Frame Straddling
Camera Head Dimension	159 mm × 131 mm × 290 mm
Camera Head Weight	4.9 kg
Camera Output	Firewire interface
Power	120/220 VAC
Shock	100G @ 10 ms any axis
Standard Camera Lens	Nikon 50 mm F-mount lens

Specifications subject to change without notice.

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P/N 2980426 Printed in U.S.A.