

POWERVIEW™ HS-650 Camera Model 630063

*POWERVIEW HS cameras...for time-resolved image capture
in Global Imaging Measurements—only from TSI!*



Features

- Image capture rate over 40,000 fps for time-resolved measurements
- Full 1280 × 1024 pixel resolution and 10-bit dynamic range
- High image capture rates and fast image recording
- Short frame straddling times
- Frame Straddling mode with interframe time of 75 ns for high speed flow measurements
- Variable exposure times ranging from 1 μs to 5 s
- Memory expandable to 4 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-650 camera offers 636 fps at full pixel resolution of 1280 × 1024 pixels and up to 40,000 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 range from a few milliseconds to a few microseconds, so a wide range of flow velocities (from a few millimeters/sec to a few hundred meters/sec) can be measured.

For PLIF and spray diagnostics, the camera can use variable shutter exposure to allow integration of images from multiple laser pulses on the same frame, thereby enhancing signal quality. The camera can be triggered externally, allowing phase locked measurements to be taken with external devices. The standard 2 GB of memory included with the camera enables a long image capture sequence. The sequence can be further increased by adding up to 4 GB of optional memory.

System Configuration

The POWERVIEW HS-650 camera system includes the compact camera head and an external power supply. This arrangement means the camera head position can be easily changed, an important feature for stereo configurations using the Schiempflug mount. A standard Nikon 50 mm lens and all related interface cables are included with the system. Image data from the camera is transferred to a host computer using the IEEE 1394 Firewire® interface. Two cameras can be combined in a stereo PIV configuration for 3-D velocity measurements, or for simultaneous PIV and PLIF applications.

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.

Specifications

Model 630063 HS-650 POWERVIEW Camera

Pixel Resolution	1280 × 1024 pixels
Pixel Size	12 μm (H) × 12 μm (V)
Image Size	15.4 mm (H) × 12.3 mm (V)
Intensity Dynamic Range	10-bit digitization
Frame Rate	

fps	Pixel resolution
636	1280 × 1024
1272	1280 × 512
2545	1280 × 256
5090	1280 × 128
10180	1280 × 64
20360	1280 × 32
40720	1280 × 16

Frame Straddling Interframe Time	75 ns minimum
Spectral Range	290 to 1100 nm
Exposure Time	1 μs to 5 s
Phase Lock	Enables camera to be synchronized with external device

Lens Mount	F-mount
Operation Modes	Free Run, Triggered and Frame Straddling

Camera Head Dimension	84 mm × 66 mm × 178 mm
Camera Head Weight	0.8 kg
Camera Controller Dimension	135 mm × 51 mm × 95 mm
Camera Controller Weight	0.7 kg
Camera Interface Output	IEEE-1394 (Firewire)
Camera to Controller Cable	3 m
Power	120/220 VAC
Standard Camera Lens	Nikon 50 mm F-mount lens

Specifications subject to change without notice.

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