LaserPulse™ Synchronizer Model 610035

It's all in the timing.

Features

- Simultaneous control of multiple cameras
- 1 ns time resolution
- External triggering for phase-locking measurements
- Programmable trigger input and output channels
- Trigger signals for PIV, PLIF, and high-speed lasers
- Trigger signals for cameras and camera interfaces
- Effortless programming through ***INSIGHT 3G***™ Data Acquisition, Analysis and Display Software

Introduction

The Model 610035 LaserPulse Synchronizer from TSI is a programmable master timing control unit for use in Particle Image Velocimetry (PIV), Planar Laser-Induced Fluorescence (PLIF), and other global imaging applications. Acting as the master controller for system components, it automates control of the timing between laser pulses, camera exposure times, camera interfaces, and any external device during system set-up and image acquisition with an amazing 1 ns resolution. The Synchronizer enables the system to be completely computer-controlled via a serial interface. Signals for the laser flash lamps and Q-switches, the camera, and the frame grabber are generated and automatically synchronized for effortless image acquisition through TTL and time domain trigger signal input and output, with a total of ten programmable output channels.

Critical to the performance of any global imaging measurement is the precise timing of all events in the measurement cycle, including the laser flash lamps and Q-switches, camera exposures, and external trigger events. Such measurement methods have matured significantly since TSI introduced the first commercial PIV system in 1988 and, accordingly, the timing requirements have become more complex and stringent. The Model 610035 Synchronizer has been redesigned from the ground up in order to satisfy the timing requirements for the next generation of PIV, PLIF, and other global imaging measurements. The power and flexibility of the Synchronizer are enhanced even further when driven by the latest version of TSI's ***INSIGHT 3G*** global imaging software platform.

TSI®

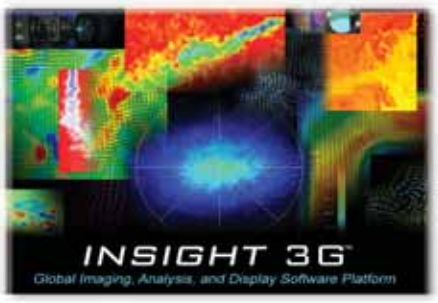
Applications

The Model 610035 Synchronizer can be used for all PIV, PLIF, Time-Resolved PIV, MicroPIV, and Spray Analysis system configurations. For PIV measurements, the pulse delay time and the time between pulses necessary to collect frame-straddled images are controlled by the Synchronizer via TSI's ***INSIGHT 3G*** software. For PLIF or other specialized imaging experiments, the Synchronizer can drive the cameras in a long exposure mode, integrating the collected light signal over multiple laser pulses or pulse-pair cycles.

Simultaneous PIV/PLIF experiments can also be coordinated via the Synchronizer, providing complete control of 3 cameras (two for stereoscopic PIV measurements and one for PLIF) as well as the laser flash lamps and Q-switches. Furthermore, the PIV and PLIF cameras need not be the same in order to optimize camera performance relative to the respective measurement. The Model 610035 Synchronizer can operate in an external trigger mode, for phase-locking PIV or PLIF measurements to some external event or periodic trigger.

INSIGHT 3G™ Global Imaging, Analysis, and Display Software Platform

The ***INSIGHT 3G*** package features all of the tools needed for even the most advanced global imaging measurements, from our patented processing algorithms to the most elaborate data analysis features available. And now, equipped with the *HyperStreaming* Module and the Super Resolution Particle Velocimetry, the power of the ***INSIGHT 3G*** Platform can be unleashed on enormous amounts of data, using features such as the POD Analysis Toolbox and distributed processing capability over a network of computers to quantify the flow properties of interest with the desired detail.



Specifications

Model 610035 Synchronizer

Pulse Generation	
Delay	0 - 1000 sec.
Pulsewidth	10 ns to 1000 sec.
Resolution	1 ns
Time base	100 MHz, 25 PPM crystal oscillator
RMS jitter	<400 ps
Outputs	
Outputs	TTL/CMOS, Adjustable 2 - 20 V, 35 V (optional)
Impedance	50 Ohms
Slew Rate	>0.5 V/ns
Overshoot	<100mV + 10% of pulse amplitude
Amplitude(adjustable mode)	1 - 6 V into 50 Ohm load 2 - 12 V into high impedance load
External Trigger	
Rate	DC to 5 MHz
Threshold	500 mV to 15 V
Input range	0 - 30 V
Trigger slope	rising or falling edge
RMS jitter	<5 ns
Insertion Delay	<150 ns
Communication to computer	RS-232
Operating voltage	120/240 VAC, 50-60 Hz
Dimensions (H × W × D)	8 × 4.75 × 10.5 in. (20.3 × 12 × 26.7 cm)
Weight	2.5 lb. (1.1 kg)

Specifications are subject to change without notice.

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