

Lambda SC SmartShutter™ CONTROLLER

SUTTER INSTRUMENT



The **Lambda SC** is a full-featured micro-processor controlled shutter driver for the **SmartShutter™**. It supports the same shutter command set used for our other Lambda controllers and offers enhanced performance through additional modes of operation. The additional operating modes allow programmable control over the exposure time, the delay between exposures, the number of exposures, the mode of triggering and the mode of shutter operation. The **Lambda SC** utility program allows computer control and configuration of multiple SC controllers through serial or USB ports. In the Lambda 10 family of filter wheel controllers, shutter timing is controlled directly by the time of occurrence of commands or TTL input. In most cases, the system software used with these controllers has provisions for controlling the timing of the shutter. The Lambda SC shutter controller may be used in applications that would benefit from enhanced control options built into the controller. A convenient toggle switch on the front panel has three positions: OPEN (shutter will open regardless of other inputs), CLOSED (shutter will close regardless of other inputs) and AUTO. In the AUTO position, the controller can be operated remotely from a computer through the USB port, or opened and closed using a logic level input. In the free running mode, the shutter will open and close repeatedly.

The time between closing and reopening can either be directly timed, or set as an interval for the entire cycle. Delay and exposure intervals can be set by the user for up to 5 hours with millisecond resolution. This mode can be set to continuously run or loop for a specific number of cycles. The mode is initiated from power up, or a trigger pulse, and can be interrupted by using a stop command. Because the SmartShutter incorporates a microprocessor controlled motor/wiper design, the trajectory of each move can be controlled and the motion of the blade optimized for speed or for smoothness. When speed is the most important condition, the user can select the fast mode. If the modest amount of vibration in the fast mode is objectionable and speed is not important, the "soft" mode can be selected, moving the blade slower through the overall travel.

The neutral density mode results in a partial opening of the **SmartShutter**. Any one of the 144 steps from a fully closed to fully open can be selected. Using this variable aperture opening along with a liquid light guide acts to spatially homogenize the light to produce a uniform spatial illumination that's independent of the geometry of the input illumination.

Features Lambda SC

- Microprocessor based controller
- Serial USB and TTL interfaces
- User can produce a variable aperture by selecting the degree of shutter opening
- "Soft" action mode provides minimum vibration
- TTL activation of the shutter can be set to high, low, or toggle on rising/falling edge
- Programmable delay and exposure intervals of up to 5 hours with millisecond resolution
- commands can run continuously or loop a specified number of times
- Programmable delayed sync out
- Universal power supply

Features SmartShutter™

- Robust design
- Life tested to 100 million cycles
- Modular repairable design
- Opening time 8msec from trigger (for 25mm & 35mm versions)
- Continuous operation frequencies as high as 40Hz
- Stand-alone or use with Sutter filter wheel
- Mountable in **Lambda LS, Lambda XL and Lambda DG-4/DG-5**

Controller

LB-SC Includes one Lambda 10-B control unit, serial and USB cables, power cable and manual

SmartShutter

- IQ12-SA** 12.5mm **SmartShutter** with stand-alone housing
 - IQ25-SA*** 25mm **SmartShutter** with stand-alone housing
 - IQ25-LS** 25mm **SmartShutter** with housing to fit **Lambda LS**
 - IQ25-DG** 25mm **SmartShutter** with housing to fit **Lambda DG-4/DG-5**
 - IQ35-SA** 35mm **SmartShutter** with stand-alone housing
 - IQ50-SA** 50mm **SmartShutter** with stand-alone housing
- *Where vignetting may be an issue, we recommend the 35mm shutter.

Accessories

W621520 USB cable

W621505 9 pin male/female **SmartShutter** (no wheel)

FSWICH Foot switch with BNC connector - Changes state of shutter with foot press as long as foot press is maintained

FSTOGGLE Foot switch with BNC connector - Alternates open/close with each foot press