New Features

- NEW: USB SUPPORT
- NEW: BUILT-IN *SMART*SHUTTER® CONTROL
- NEW: EXPANDED MENU OPTIONS AND ENHANCED TRIGGERING
- COMPLETE SYSTEM FOR WAVELENGTH SWITCHING
- INTEGRAL SHUTTERING
- INTEGRAL NEUTRAL DENSITY FILTERING
- TWO OUTPUTS FOR MONITORING FILTER POSITION
- TURBO BLANKING
- STROBE-PULSED RING BUFFER CONTROL
- DIRECT COMPUTER CONTROL VIA PARALLEL, SERIAL OR USB INTERFACE
- SWITCHES IN 0.5msec

LAMBDA DG-4/DG-5 PLUS HIGH SPEED WAVELENGTH SWITCHER

The **Lambda DG-4/DG-5 PLUS** is a complete illumination system offering speed and versatility for experiments requiring rapid wavelength switching. New digital servo technology allows faster filter switching and 30% greater light output than the first generation **DG-4/DG-5**. The instrument retains all the advantages of interference filter based systems, yet eliminates the temporal constraints imposed by traditional filter changing devices like filter wheels. Switching between any two wavelengths is achieved in 0.5msec, allowing the user to perform real-time video imaging. The high switching speed of the **Lambda DG-4/DG-5 PLUS** facilitates the ability to follow fast changes in ion concentrations in dual wavelength ratio imaging applications and to monitor other concomitant changes in the studied system at additional wavelengths.

Narrow bandpass systems, such as single cavity interference filters, grating monochromators, and A.O. modulators, pass unwanted harmonics of the desired wavelength. Also, with variable wavelength devices, it is not always possible to obtain sufficient blocking of out-of-band wavelengths. Modern interference filters, as used in the **Lambda DG-4/DG-5 PLUS**, do not pass harmonics and have integral blocking characteristics 1000 times better than typical monochromator systems. For the same full width at half maximum (FWHM), interference filters have a narrower spectral bandpass than monochromators due to the absence of the slit function.

The dual galvanometer design of the **Lambda DG-4/DG-5 PLUS** allows tuning of the relative intensities at each wavelength. This adjustment is difficult to obtain in variable wavelength devices with a single optical path. Unlike monochromators and other wavelength selective systems, the **Lambda DG-4/DG-5 PLUS** can be used as a source of white light when required.

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DG-4/DG-5 PLUS
BASIC SYSTEM WITH IMPROVED GALVOS

Includes main unit with 300W pre-aligned xenon arc bulb, 4 slide-in filter holders (25mm), 1 neutral density filter holder (25mm), power cord, serial and parallel cables, liquid light guide, spanner wrench, and manual. (DG-5 PLUS includes an additional 18mm and flat wrench. Three positions are 18mm, and two are 25mm in diameter).

DG-4PLUS/OF30
DG-4 PLUS with 300 Watt ozone-free bulb

DG-4PLUS/FS30
DG-4 PLUS with 300 Watt full spectrum bulb

DG-5PLUS/OF30
DG-5 PLUS with 300 Watt ozone-free bulb

DG-5PLUS/FS30
DG-5 PLUS with 300 Watt full spectrum bulb

SPECIALTY DG-4

DG-4/T[1]
DG-4 with tungsten bulb

[1] *Power supply is supplied by the customer.*

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MADE IN USA

10-2017

How it works:
This unique optical design of the Lambda **DG-4/DG-5 PLUS** is based on dual scanning galvanometers utilizing interference filters for wavelength selection. The light from the xenon arc lamp is focused on the first galvanometer mirror which directs it via a parabolic mirror, through one of the interference filter channels. Following the filter, a second parabolic and a second galvanometer mirror collect and redirect the light into the light guide. A cold mirror in the beginning of the light path eliminates the IR radiation, reducing significantly the amount of heat absorbed by the optics and the sample. Cold mirrors modified to pass near-IR to 780 to 880nm are also available.

A built-in shutter function allows reduction of light intensity by five to six orders of magnitude. For applications requiring mechanical shuttering, like time lapse experiments or very sensitive samples, an optional ***Smart*Shutter®** can be installed in the device to assure that the light is completely blocked. A newly integrated *Smart*Shutter controller eliminates the need to purchase a separate control device.

The standard system, the **Lambda DG-4 PLUS**, holds up to four 25mm interference filters. The **Lambda DG-5 PLUS**, a five filter version, accommodates three 18mm and two 25mm filters. While the switching time between any two wavelengths is done in less than 0.5msec, the dwell time at any wavelength is arbitrarily set by the user.

The liquid light guide can be coupled to the illumination port of most microscopes using an adapter which can be purchased separately. Please refer to the "Microscope Adapters" section for further information. Extended output ranges are possible with various cold mirror and light guide combinations. Phone Sutter to discuss your specific application requirements.