pE-4000

UNIVERSAL LIGHT SOURCE

ALL WAVELENGTHS INCLUDED

• POWERFUL • EFFICIENT • COMPACT

CE

www.CoolLED.com

CoolLED

CoolLED *p*E-4000 – The Universal Light Source

The *p*E-4000 sets the standard as the universal light source for fluorescence microscopy. Users can operate the system as a simple white light source (replacing a conventional mercury-based light source), or as an advanced, fully-controllable, excitation and stimulation source. The flexibility and extensive functionality of the *p*E-4000 broadens the range of illumination options in core facilities.

At the centre of the *p*E-4000 is CoolLED's novel, patent pending, wavelength-grouping concept which offers more power in an efficient system design. Wavelength-grouping ensures optimal compatibility with all single and multi-band filter sets.

WHITE for Simplicity

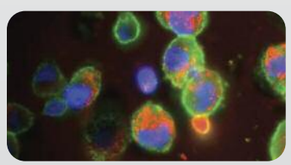
ADVANCED for Control

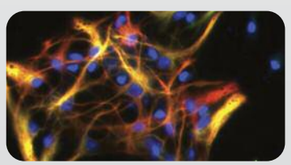
IDEAL FOR MULTI-USER AND CORE FACILITIES

- **Simple** on/off
- **Precise** intensity control
- **Easy to use,** no training required
- **Pre-sets** allowing lab manager to match white spectrum to existing filter cubes
- **Higher contrast images** from matched-white spectrum

*p*E-4000 LED SYSTEM

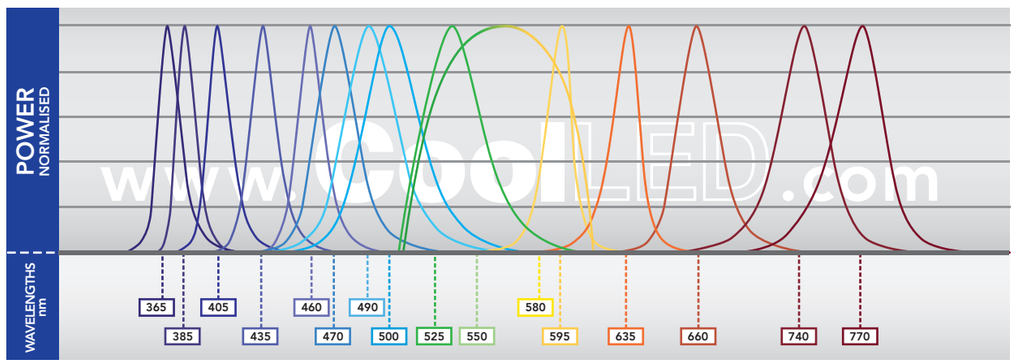
- Excellent field uniformity at sample
- No mercury
- Long Life: 25,000 hours
- No bulb changing, bulb alignment or warm up process
- Quiet operation
- High efficiency
- Wide range of microscope adaptors





16 SELECTABLE WAVELENGTHS

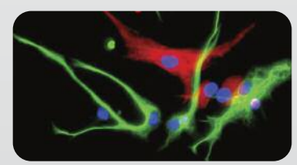
NO MODULARITY • COMPATIBLE WITH ALL FILTER SETS



BROADEST SPECTRUM • BRIGHTEST LEDS

IDEAL FOR ADVANCED RESEARCH

- **Individual LED wavelength selection**
- **Rapid switching** between LED wavelengths enables capture of high speed events
- **TTL & USB** interfaces with imaging packages
- **Excitation filters** can be fitted in optical path for controlled switching with no moving parts
- **Analogue** for dynamic intensity control
- **Optical feedback** for applications requiring higher stability
- **Internal function generator** for electrophysiology and optogenetics applications
- **Compatible** with all single and multi-band filter sets



NO MORE MERCURY!

SPECIFICATIONS

pE-4000 system: Main unit with complete set of wavelengths, dual function manual control pod, power supply block, mains cable, USB cable

Light Delivery: Single liquid light guide or fiber options

Collimating optics: Range of collimating optics and adaptors to fit most fluorescence microscopes

LED Wavelengths: Wavelengths are divided across 4 channels with each channel having individual control. Power measured at sample plane.

CHANNEL 1			CHANNEL 2			CHANNEL 3			CHANNEL 4		
Wavelength (nm)	Power (mW)	FWHM (nm)	Wavelength (nm)	Power (mW)	FWHM (nm)	Wavelength (nm)	Power (mW)	FWHM (nm)	Wavelength (nm)	Power (mW)	FWHM (nm)
365	15.12	12	460	240.19	19	525	39.00	34	635	123.88	16
385	59.39	11	470	192.29	20	550	166.74	85	660	159.01	21
405	188.32	18	490	56.00	32	580	166.74	85	740	36.62	29
435	138.75	16	500	59.26	29	595	32.52	15	770	15.61	28

Powers measured at sample plane of research grade microscope using 100% mirror in cube and 10X objectives. (Figures are typical values). Note wavelength settings 550nm and 580nm use single broad, high intensity peak (see spectrum on pages 2-3)

CONTROL & INTERFACE

Manual: Dual function manual control pod for White mode or Advanced mode

Remote: Via USB for independent on/off and intensity control of each channel. Triggering speed <1ms
Via 4 TTL inputs for independent on/off control of each channel. Triggering speed <20us
Via single TTL for on/off control of manual or software selected channels
Via 4 analogue inputs 0-10V, 0-300kHz for dynamic control of intensity from external analogue signals

Synch Out: 4 TTL outputs for each channel – active high
1 TTL output for any channel – active high

Programmable interface: 4 TTL outputs for on/off control of peripherals (transmitted light sources, stages etc)
4 analogue outputs for intensity control of peripherals (can be programmed to mirror LED intensities for channel control) 0-10V full scale.

Function Generator: Internally generated sine, pulse and ramps for each channel programmed via pod.

Connectivity: USB (B type) for PC connection. All other TTL and Analogue inputs/outputs via 25way 'D-type' female connector (optional rear mounting expansion box available for BNC connectivity).

Imaging Software: Recognised as 'CoolLED *p*E-2 peripheral' under common software e.g. Micromanager, MetaMorph, cellSens, NIS Elements, ImagePro, etc.

POWER

Power requirements: 110-240Va.c. 50/60Hz, 2.5A

Power consumption:

Standby (i.e. no LEDs on)	Max 7W
Single wavelength operation	Max 41W
Dual wavelength operation	Max 75W
Triple wavelength operation	Max 93W
Quad wavelength operation	Max 112W

DIMENSIONS

Main unit: 200mm(w) x 75mm(d) x 185mm(h) – Weight 3.5kg
Control pod: 154mm(w) x 135mm(d) x 40mm(h) – Weight 0.95kg
Power Supply: 164mm(w) x 64mm(d) x 35mm(h) – Weight 0.58kg

ENVIRONMENT & SAFETY

LED products are more sustainable and energy efficient than conventional light sources. CoolLED's products have the following benefits:

- No Mercury
- Energy Efficient: 80% less power
- Long lifetime
- No bulb replacements
- Reduced risk of eye damage
- No special disposal regulations

TO ORDER

***p*E-4000-L-SYS-ZZ**	Main unit, control pod, power supply plus cables for use with 3mm liquid light guide
***p*E-4000-F-SYS-ZZ**	Main unit, control pod, power supply plus cables for use with SMA terminated fiber
***p*E-1904**	3mm diameter, 1m long liquid light guide
***p*E-1908**	3mm diameter, 3m long liquid light guide
***p*E-10400-YYY**	Microscope adaptor with collimating optics. To specify microscope code (YYY) see http://www.coolled.com/Life-Sciences-Analytical/Products/Microscope-Adaptors/
Fiber Options	see http://www.coolled.com/Life-Sciences-Analytical/Products/Accessories/Light-Delivery/ for further information
***p*E-4000-EB25D**	Rear mounting expansion box for 25way D-type to BNC connectivity

Specify local power cable (ZZ). 10=Australia, 20=Europe, 30=UK, 40=USA

Warranty System: 12 months, LEDs: 25,000 hours

CONTACT

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