

# Pulsed Light Sintering R&D System

## FEATURES

High peak energy – sintering less than 1 millisecond with 1 pulse  
Adjustable exposure intensity  
Room Temperature process  
Low heat surface treatment – sinter on heat sensitive materials  
Exposure area options -  
    Circular: 5.50" dia.  
    Linear: 1" x 16"  
Lamp spectrum: UV/Visible - 200 nm to 1000 nm  
    Spectra UV cutoff options – Lamp type A, B, C  
Modular – easy to integrate on production lines  
Instant ON/OFF lamp control - low energy costs



Researchers working with functional nanotechnology materials in the field of Printed Electronics have a new resource available. The RC-847 from Xenon uses high peak energy, pulsed light technology that allows conductive nanoparticles to be heated and fused at room temperature without significantly heating the substrate or adjacent thermally sensitive components.

Model RC-847 provides a high energy, pulsed light for reliable, repeatable sintering of conductive nanomaterials on heat sensitive materials. The RC-847 system features a high intensity pulsed xenon lamp that provides a broadband spectrum, from 200 nm to 1000 nm with 505 Joules/pulse energy.

## Sintering at room temperature

The printed electronics market is in a transition as developments in new materials drive applications from R&D toward production. Functionally conductive inks and coatings are being manufactured with nanoparticles for use with low-temperature, low cost substrates such as paper, PET and polyethylene films. Printing on flexible substrates such as printed circuit boards, at room temperature, is becoming a reality. The challenge facing producers of evolving nanoparticle inks is how to sinter or anneal these inks at temperatures typically below 160 C° to prevent damage to the substrates. Pulsed light technology from Xenon offers the solution! The high peak energy pulse, delivered in milliseconds, quickly heats the inks and not the substrate. The high energy removes the solution and leaves just the metal flakes which are sintered or annealed. The substrate is not affected by the pulsed light. The flexibility of Xenon's RC-847 offers the ability to customize a system to match the sintering needs of a range of silver (Ag) nanoparticle inks on heat sensitive substrates.

Optional lamp housings offer different sintering exposure areas. Model LH-810 covers a 5.5" dia. area while model LH-840 covers a 1" x 16" linear area.



The logo for Xenon, consisting of the word "XENON" in a bold, blue, sans-serif font. The letter "O" is stylized with a circular pattern of lines radiating from its center.

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## SPECIFICATIONS- MODEL RC-847 with lamp options

*All specifications are typical unless otherwise noted ( $T_{AMBIENT}$  @ +25°C,  $V_{INPUT} = 208$  Vrms)*

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System Units	Model RC-847 Controller Lamp Housing Options Model LH-810: 5.5" diameter optical footprint Model LH-840: 1" x 16" optical footprint Lamp Housing Blower Kit <sup>1</sup>
RC-847 Front Panel Controls	
Timer power	ON/OFF
High voltage	ON/OFF
Continuous mode	ON/OFF
Pulse mode select	Timed or Continuous
Programmable timer	1 to 999 seconds in 1 sec interval
Flashlamp pulse rate	Factory set: 3 pulses/second
Timed start	Pushbutton
RC-847 Power Input	
With PS-812 HVPS	1-phase 200-240 Vrms, 50/60 Hz, 20 amps, max
Power output to flashlamp	2300 J/s, max
Mains power cord	8-ft (2.4 meters)
Lamp Housing Blower Options	
Model BL-510, 510 m <sup>3</sup> /h	1-phase 200-240 Vrms, 50/60 Hz, 4 amps
Model BL-1020, 1020 m <sup>3</sup> /h	1-phase 200-240 Vrms, 60 Hz, 6 amps
Model BL-1030, 1020 m <sup>3</sup> /h	1-phase 200-240 Vrms, 50 Hz, 6 amps
Pulsed Light	
Pulse Energy & Pulse Rate	505 J/pulse <sup>2</sup> @ 3 pulses/second, max
Pulse Width	360µS
Lamp Housings	
Model LH-810	107 mm diameter spiral lamp, type A, B, C spectra options
Window Opening	6.3" (160 mm) diameter
Optical Illumination Area	Circular: 5.50" (139.7 mm) diameter
Model LH-840	16" Linear lamp, type A, B, C spectra options
Window Opening	21.0" (533 mm) x 3.5" (89 mm) L x W
Optical Illumination Area	16" (406 mm) x 1.0" (25.4 mm)
Cooling	RC-847 - internal fan, continuous ON LH-810/LH-840 Lamp Housing - external blower <sup>1</sup> Model BL-510 510 m <sup>3</sup> /h, 50/60 Hz Model BL-1020 1020 m <sup>3</sup> /h, 60 Hz Model BL-1030 1020 m <sup>3</sup> /h, 50 Hz
Outline Dimensions	Height x Width x Length
Model LH-810 housing	6.00" x 7.80" x 9.5" (152 x 198 x 241 mm)
Model LH-840 housing	7.50" x 30.0" x 7.0" (190 x 762 x 178 mm)
Model RC-847 cabinet	8.8" x 18.9" x 27.8" (226 x 480 x 706 mm)
Weight	
Model LH-810 lamp housing	9.5 pounds (4.4 kg)
Model LH-840 lamp housing	32 pounds (14.5 g)
Model RC-847 controller	87 pounds (39 kg)
Operating Environment	
Temperature	0 - 40°C (32-104°F)
Relative Humidity	10 - 90% (non-condensing)

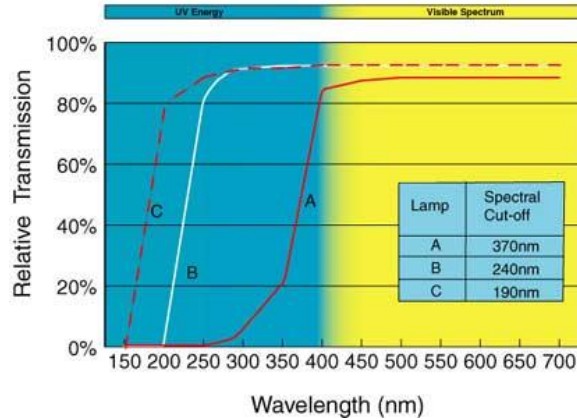
### Notes:

- 1 - Lamp Housing Blower Kits include blower, blower filter, metallic ducting, duct clamps and mains power cord.
- 2 - Pulse energy user adjustable.

Specifications subject to change without notice

## Lamp Spectra

The Xenon lamp inherently produces a broadband, UV/Visible spectrum from 200 nm to 1000 nm. Lamps are available with three different spectral cut-offs, producing unique wavelength properties suitable for different substrate materials. Lamp spectral cut-off wavelengths are shown below:



**For more than 45 years**, Xenon has provided high-energy pulsed-light lamps and systems for the OEM production of medical devices, optical storage media, displays and semiconductors. We're experienced at solving curing problems requiring low-temperature solutions. And in emerging applications, such as sintering nanoparticle inks on low-temperature substrates and the low-temperature curing of thin-film substrates (e.g. organic photovoltaic, OLED displays and multi-layer flexible circuits), we have developed products with extraordinary ranges of power and system flexibility. Our engineers will help you configure your ideal solution. We invite you to visit our labs and bring your application with you or contact us to arrange a conference call with our engineers. At Xenon, we step our customers through the discovery process of pulsed light. And we're ready to work with you to make your application a success.

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SD115c 3/10

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