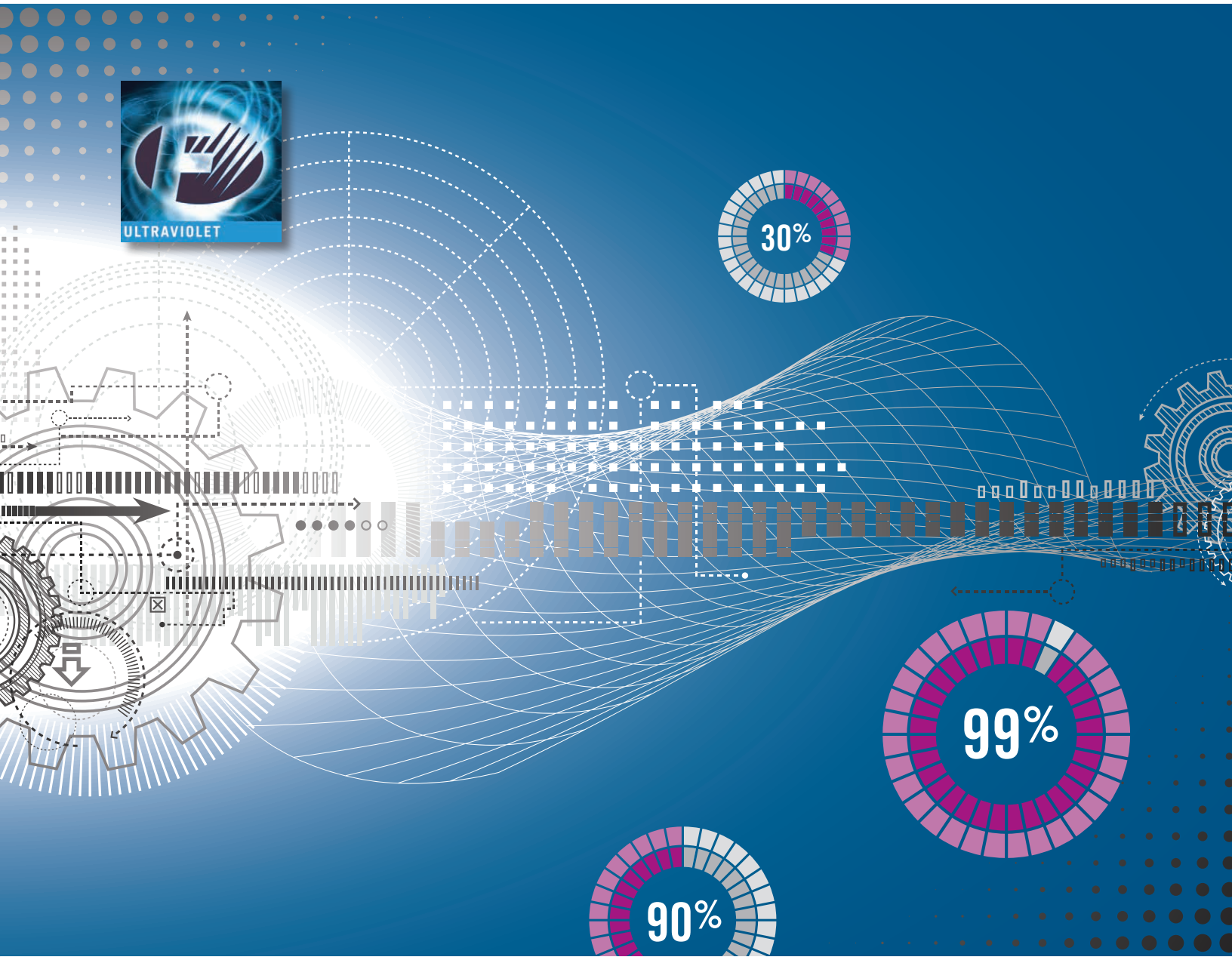
Heraeus



Empowering the Possibilities for Greater Energy Efficiency

Light Hammer 10 MARK II

Your First Worry Isn't The Competition. It's Downtime. That means your manufacturing line needs the world's most advanced lamp driver.

Heraeus Noblelight's world-leading technology has advanced UV curing processing to deliver increased **flexibility, first-time performance, and unparalleled reliability on your manufacturing line** when you need it most. Backward compatible and adaptable to your existing systems, engineered with easily upgraded software, and featuring a lower cost of ownership – **the new Heraeus Noblelight Light Hammer 10 MARK II sets a new benchmark in curing innovation.**

Introducing the Heraeus Noblelight Light Hammer 10 MARK II
The 10" Product Platform For The Future
Future-focused technology and more powerful than any curing alternative on the market, your high value products aren't going to know what hit them.

The Light Hammer 10 MARK II is compatible with AIMS (Advanced Integrated Monitoring System) software/hardware, and is enabled for the addition of the future intelligent irradiator. It is the successor to the current LH10 and the foundation for the Light Hammer 6 MARK II; brought to you only by Heraeus Noblelight.

FLEXIBLE
MODULAR DESIGN

- Reduced mean time to repair
- Easily expandable
- Memory capability

In today's marketplace, the performance requirements demanded of UV-cured formulations are significantly greater than at any time during the history of industrial UV curing. These performance requirements include improved hardness and scratch resistance, while retaining flexibility and providing long-term weatherability.

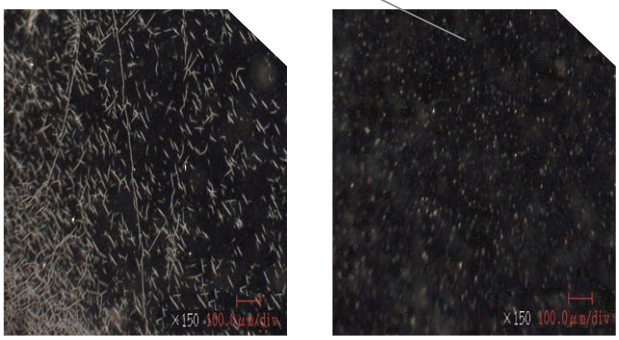
The successful achievement of these performance characteristics is providing today's end users with a high value-added benefit to their products. These, and other performance properties, are typically determined by the selection and optimization of the types of oligomers, monomers, and photoinitiators in a given formulation.

The Heraeus Noblelight Light Hammer product platforms are DC-driven sources that deliver near-constant UV energy output. This significantly impacts the photopolymerization process, "network structure," and cured film performance properties. Due to the high intensity output of the LH platform, one can generate a higher number of domain cross-link structures. With near-constant UV energy output, one also significantly reduces premature terminations, resulting in a more uniform size domain structure.

This improvement in the uniformity of the 3D cross-linked "network structure" provides superior uniform physical properties across an entire UV-cured film, including surface hardness, elongation, weatherability, and optical functions (anti-glare, anti-reflective, refractive index, etc.).

The Light Hammer 10 MARK II heralds a significant advance in power supply design.

Shown below: Example of Weatherability Test Result (900 hrs) TMPTA Irradiation energy: 250 mJ/cm²



Conventional UV lamp

Heraeus Noblelight LH Series

The Light Hammer 10 MARK II product platform builds on the original but improves the user experience by making it more efficient, flexible, and dependable. **The Heraeus Noblelight LH10 MARK II is the Power Supply for the future**.

Heraeus Noblelight's product development is driven by a customer-centric mandate of continual innovation and improvement for manufacturing your high value-added products. With the new Light Hammer 10 MARK II, only Heraeus Noblelight provides:

- **Simplicity and flexibility in the control scheme**
  – Software versus hardware
- **Ease of integration, high compatibility**
  – Backward compatible with existing LH10 installations
- **Increased uptime and reliability of product**
  – Minimization of unscheduled downtime
- **Multiple communication protocols**
  – DeviceNet™, Profibus®, EtherNet/IP™, Dry Contact, and "Plug & Play" options
- **Power Factor Correction**
  – Reduced electrical load, better than 99% at full load

Electrical

The efficiency of the LH10 MARK II is driven by the refined electrical design of the power supply. Its auto-ranging power input means that the customer does not have to configure or reconfigure the lamp systems – it is truly plug & play from 200 V to 480 V at 50 or 60 Hz.

Advanced circuitry design achieves a realized Power Factor Correction of 99%. This translates to significantly higher electrical efficiency, balanced current draw over all three phases, lower demand on the utility's reactive power, and lower THD (total harmonic distortion). This results in >93% converted efficiency which means less heat generated, cooler operation, and fewer headaches for facilities engineering and maintenance personnel.

The advanced circuitry design achieves a Power Factor Correction of >99%, which means significantly higher efficiency.

The advanced internal circuitry and low High Voltage Output Capacitance have been designed to improve reliability. In addition, the LH10 MARK II does not require calibration after repair – making the repair process easier and more reliable.

Physical / Mechanical
The physical design of the power supply has been improved by reduced weight and better air flow for more efficient cooling. The chassis is just slightly smaller, making for easy swap out of existing installations with no changes. The LH10 MARK II is backward compatible and maintains the same SKUs for maintenance.

The new unit boasts a significant weight reduction of its solid state design over legacy products employing transformer technology. We decreased the weight an additional 32% from the original Light Hammer 10, making the new LH10 weigh only 30% of an equivalent transformer-based power supply.

Controls / Communication
The Light Hammer 10 MARK II has full software control and advanced communication features. This means that upgrades, configurations, and fault retention can be conducted through the USB port in the front of the power supply. No longer is there a need for maintenance personnel, facility engineers, or process engineers to access internal components of the power supply. Configuration changes or software updates can be performed with a memory stick.

It Was Worth The Wait.
Superior uniform physical properties across an entire UV-cured film.

With this new platform, we have also expanded the control options including remote controls via dry contact circuitry. This control structure is simple, inexpensive, and compatible with a wide variety of control architectures, making it familiar and user friendly.

We understand that many customers want choices for controlling their UV curing hardware. As such, we have expanded the choices of Industrial Standard Communication Protocols, and we are able to configure the power supply for DeviceNet™, Profibus®, and EtherNet/IP™. The new control architecture allows data logging and diagnostics independent from the user interface.

This expands on the functional capability of AIMS (Advanced Integrated Monitoring System), which was developed for the original Light Hammer 10. Heraeus Noblelight has made the compatibility of AIMS a key requirement in the MARK II version. This means we offer our customers the capability to monitor critical operating parameters, and can offer support along the way.

Certifications
The Light Hammer 10 MARK II Power Supply is RoHS compliant and c/UL, TÜV and CE approved. The product has achieved the most widely accepted agency certifications.

Modular Blower
We offer an integrated modular blower option for the LH10 irradiators, making laboratory and small installations easier and simpler.

Introducing the H
Light Hamme
With improved e
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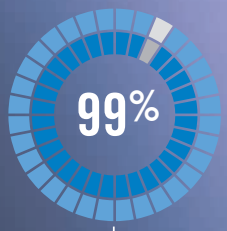
ACCESSIBLE

All electrical and communication connections made at the rear panel. Software upgrades made directly through the USB port.

USB PORT

Designed for easy configuration changes and efficient software upgrades.



POWER FACTOR CORRECTION (PFC)

- Realized 99% at full load
- Simplified wiring for balanced legs for current
- Electrical configuration is eliminated

FLEXIBLE

SIMPLE CHANGEOVER

LH10 MARK II is a drop-in replacement – form, fit, and function – but with unprecedented advances in technology.

MODULAR DESIGN

- Reduced mean time to repair
- Easily expandable
- Memory capability

eraeus Noblelight
r 10 MARK II

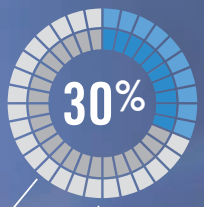
energy efficiency
r flexibility

BACKWARD COMPATIBLE

To all LH10 irradiators, cables and DeviceNet™ controls.

MULTIPLE MODES OF OPERATION

- Remote operation via DeviceNet™, Profibus®, and EtherNet/IP™
- Dry Contact Master/Slave operation
- Local front panel operation

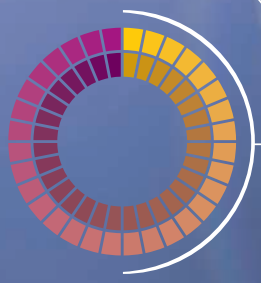


30% LIGHTER WITH A SIMILAR FOOTPRINT

Similar chassis size for ease of installation.

COMPATIBLE WITH EXISTING INSTALLATIONS

The LH10 MARK II may be purchased separately for retrofitting onto existing installations. The unit can then be configured to operate in legacy mode with the same lamp output performance.



UNIVERSAL INPUT VOLTAGE RANGES

Each power supply can operate from 200 V – 480 V, 50/60 Hz (self-adjusting voltage), “Plug & Play.”

Specifications

LH10 MARK II – Power Supply Specifications	
Input Voltages	200 V – 480 V, auto-ranging
3-Phase	50/60 Hz
Max. Line Current	30 – 12 amps
Output Range	35% – 100%
Mag. Current @100% Power	890 mA/magnetron
Mag. Current Output Accuracy	± 1%
Line Power @100%	10 kVA
Maximum Dimensions (W x D x H)	42 cm x 76 cm x 22 cm (16.5" x 30" x 8.6")
Weight	27 kg (59 lbs)
Mounting Position	Horizontal (Unit can be free standing, stacked or rack mounted)
Clearance	Allow 305 mm (12") clearance front and rear for cooling air flow and cable connections
Safety Interlocks	E-stop, RF fault, external interlock, system blower interlock
Front Panel Indicators/Controls	Lamp enable, USB port, OLED Display with ON/Standby/OFF buttons and power level control buttons

Specifications subject to change without notice

LH10 MARK II – Power Supply Power Level Control Options		
Method	**Percent Control**	**Modes of Operation**
DeviceNet™, Profibus®, EtherNet/IP™	1% steps	Remote/DeviceNet™, Profibus®, EtherNet/IP™
4 – 20 mA input	1% steps, via Master/Slave operation	Remote/Dry Contact Master/Slave
0 – 10 Vdc input	1% steps, via Master/Slave operation	Remote/Dry Contact Master/Slave
4-bit binary input	5% steps, via Master/Slave operation	Remote/Dry Contact Master/Slave
Front panel switched	1% steps, via Master/Slave operation	Local/Front panel

Specifications subject to change without notice

Global Manufacturer of Industrial UV Systems

As a leading worldwide provider of UV systems, equipment and service, we welcome the opportunity to work with you to optimize your manufacturing processes and production line efficiencies by adopting the latest advances in UV technology. UV curing can enhance product appearance, reduce costs, and increase productivity in printing, decorating, bonding or coating processes – while virtually eliminating VOCs and other environmental hazards.

Heraeus Noblelight provides UV lamps, curing systems, process designs and fully integrated solutions for your application of UV-cured inks, coatings and adhesives onto wood, glass, metal, plastic and paper. Heraeus Noblelight's modular, microwave-powered UV lamp and bulb technology is universally recognized for outstanding stability and long operational life.

But we're much more than just products. From our Applications Labs to the advice of our technical and service specialists throughout the world, we can solve your production challenges by helping to find highly effective, practical solutions.

Global reach, local presence. Call your dedicated Heraeus Noblelight Representative today to see how you can use UV curing to Empower Possibilities in your business.

ISO 9001 Certified QMS

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