Heraeus

WISAG

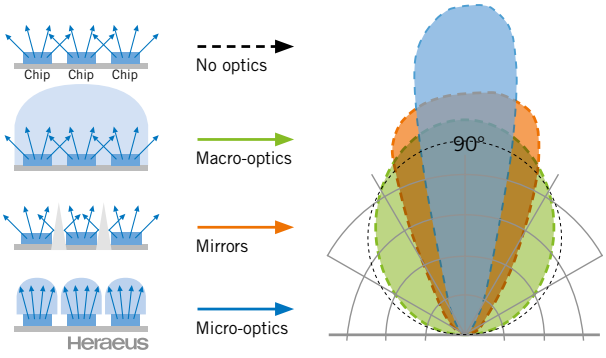
Semray®

The UV LED Plug & Play Revolution.
Complexity made simple.

The simple things are working best.

That's why we made things simple for you.

Semray® is the easy-to-use UV plug & play revolution – and the smart solution for your production chain. Semray® provides smart answers to all your challenges.



Semray® reduces stray light to a minimum with an exit angle of 60 instead of 120 degrees – for all available wavelengths

1 The first challenge: Productivity

Conventional UV LED systems are fixed in place and bolted together, which means the entire system has to be removed when a fault occurs or maintenance has to be carried out. That costs time and money and makes service work difficult.

Our answer: Plug & play

Semray® makes things much easier. Thanks to its revolutionary plug & play principle, individual segments can be replaced in next to no time – without needing any tools or having to disconnect data or power cables. Each backplane has just one data cable and one power cable, thus minimizing downtime and maximizing the availability of the UV LED system. This saves time and money on expensive servicing work and makes it much easier to integrate the system into a plant.

The backplane is firmly attached to your machinery and incorporates the cable connections required for communication and power supply. You can then insert as many UV LED segments as you need into the backplane via the plug & play system and replace them with ease as and when necessary.

2 The second challenge: Output

The theory is simple: More UV LED chips = more power. The reality, however, is much more of a challenge. How can more UV LED chips be installed in the same space – while also ensuring they are efficiently cooled and work more effectively? Ultimately, UV LED chips only perform to their maximum capability within an optimum temperature range.

Our answer: Input

And so the theory has to be developed further. After all, it isn't just the number of LED chips that matters, but how much energy makes it onto the substrate, too. We use micro-optics in Semray®. These devices focus UV radiation, thereby reducing stray light to a minimum – with an exit angle of 60 instead of 120 degrees. This ensures that more UV energy reaches the product.

The results will show up clearly in your balance sheets: a very high, consistent and even dimmable UV output that optimizes the curing process. Quality stays the same, even with large working distances.

Semray® UV4003-5

Semray® UV4003-2

3 The third challenge: Retrofitting

The market for UV LED chips is growing rapidly. This means that new, more powerful chips are being launched all the time – including new wavelengths. The chips in conventional LED lamps are permanently integrated and, when they reach the end of their service life or break down, the entire lamp has to be replaced.

Our answer: Upgradeability

The plug & play principle – which is unique on the market – doesn't just maximize availability, it also makes it much easier to upgrade systems. What's more, Semray® features replaceable UV LED channels, giving you the freedom to change to the latest UV LED chip or even different wavelengths. This reduces replacement costs and makes it easy for you to keep pace with progress and use the very latest technology at all times. Our Heraeus Service Team is on hand to help with upgrades.

A UV LED segment is simply clicked into and out of the backplane via the plug & play system, without having to remove any additional power or communication cables. Each segment is 77mm wide and features three UV LED channels that can be actuated individually. Replacing segments and channels is easy, which means they can always be upgraded to the latest state of the art. It is an approach that is both innovative and economical.

4 The fourth challenge: Flexibility

The applications for UV LED systems are many and varied and therefore require systems in different widths and with different working distances. The consequences of that are far-reaching, as users have previously had to use a UV LED system in a width that matches the width of whichever product they are manufacturing at any one time.

The situation is further complicated by the difficulties of storing UV LED lamps with different working widths – and the fact that every LED lamp used has a separate cable for power and a separate cable for data.

Our answer: Freedom

The all-in-one solution. Semray® can adapt to any task – thanks to its modular design and revolutionary plug & play backplane concept. Everything is possible, from reducing the machine width and changing the wavelength to extending the working clearance and increasing the process speed. Semray® enables you to respond to new customer requirements with lightning speed, simply by inserting or removing more segments, each 77mm wide, in the backplane.

The end result is that you have the freedom to respond flexibly to all future market developments and expand your business model as much as you like.

5 The fifth challenge: Performance

How do you develop a system that can consistently withstand the tough conditions of day-to-day production? And how do you ensure that system performs over and above expectations day after day? UV-LED-technology is very complex. The performance and service life of the UV LED system are largely dependent on cooling and how the chips are connected to the cooling element.

Our answer: Quality

Semray® achieves extraordinary performance thanks to a combination of highly advanced materials, cutting-edge design and unrivaled technological know-how.

This outstanding performance can be attributed to the micro-optics that have been developed in-house, in-house chip-on-board manufacturing and in-house system engineering and production in our lead factory.

The self-regulating cooling system also boosts performance. SFC (Self-regulating Fan Control) delivers homogeneous and stable heat management and is based on CAE (Computer-Aided Engineering) simulations. When combined with high-performance solder pastes and other assembly and connection materials from Heraeus, it helps keep temperatures within the optimum range, improves the results of the curing process and extends the service life of your UV LED system.

This user-friendly, highly intelligent technology for monitoring temperatures and other influencing factors coupled with the quartz emission window make the UV LED system robust and durable – ensuring stability for industrial and custom applications.

This same quality standard also applies to peripherals. With the Power Supply module and Control Unit, we supply everything that is required, thus simplifying integration and monitoring and making the whole process worry-free.

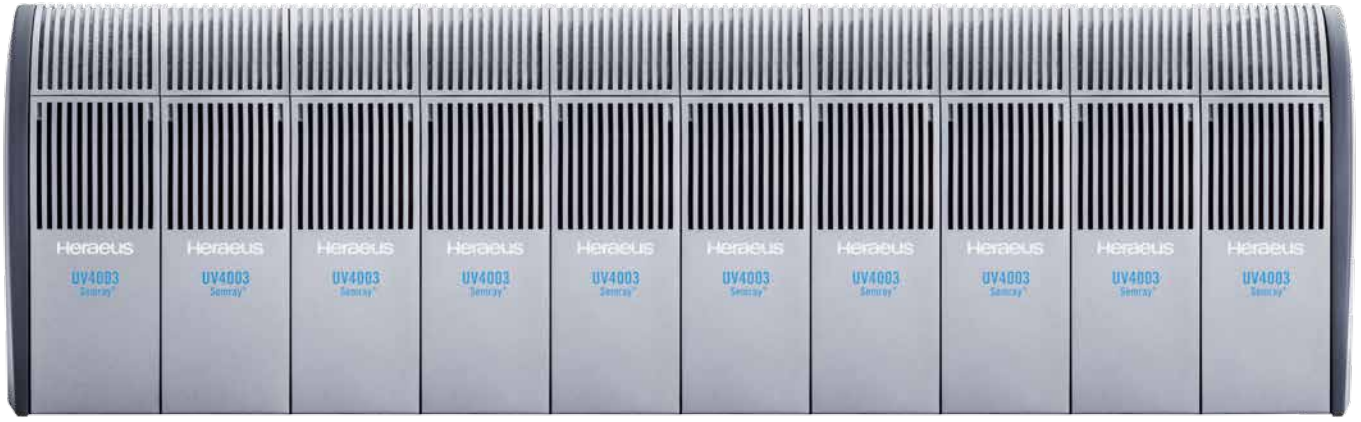
Technical overview

Model	**Semray® UV 4003 (75 mm)**
Peak wavelength [nm]	365, 385, 395
Typ. intensity at emission window [W/cm²]	14*
Power [W]	160 (385 / 395 nm) 130 (365 nm)
Emission window [mm]	75 × 45
Power consumption [W]	750
Dimensions (W × D × H) [mm]	77 × 136 × 253
Communication	Analog and RS485 MODBUS
Noise level [db]	< 68 dbA

* measured at 395 nm

Semray®. Complexity made simple.

ONE UV LED segment.
ONE backplane.
ONE data cable.
ONE power cable.
Independent of the width.



Semray® UV4003-10

The smart lamps comprise ONE UV LED segment (or more, as required) mounted on ONE backplane per curing width connected by only ONE data cable and ONE power cable per backplane.

The benefits at a glance

- **Productivity**
  Increase uptime thanks to plug & play concept and global technical support
- **Output**
  Reliable and maximized UV energy with minimum stray light for different wavelengths
- **Retrofitting**
  Stay up-to-date with the latest technology thanks to replaceable LED channels
- **Flexibility**
  Fits to any machine width and working distance due to flexible UV LED segment concept and special advanced micro-optics
- **Performance**
  Sophisticated materials and cutting-edge design combined with high-quality and state-of-the-art LED technology

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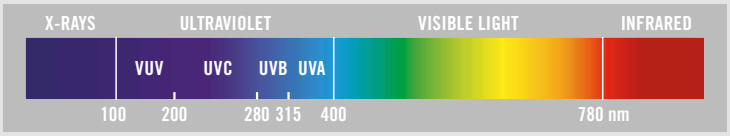
ULTRAVIOLET

We make light productive!



Heraeus Noblelight is the top global name in photonics-based products and solutions from UV to infrared. We offer sophisticated and dependable lighting systems that are developed for specific customer applications. Benefit from major productivity gains, product improvements and optimized energy use in industrial, scientific and medical applications.

We work closely with plant manufacturers and end-customers to develop customized solutions for industrial processes. In 1904, the invention of the mercury vapor quartz glass lamp paved the way for the production of special UV lamps at Heraeus. Today, more than 90 percent of our UV developments are customer-specific solutions.

Our UV experts want to help you find the optimum solution for your process. They carry out practical tests on customer materials and optimize industrial processes in our in-house application and development centers around the world. We also have an ISO 17025-accredited measurement lab in Hanau, where various lamp types and devices are calibrated and customer-specific measurements can also be carried out. Make the most of our expertise and our decades of experience with technical lighting systems.

Our top priority is to find the right solution for your process requirements. No matter whether you want to optimize existing applications or are keen to move into new markets, Heraeus Noblelight offers you efficient, well thought-out and durable solutions that will make sure you stay one step ahead of the competition.

Put your trust in tried-and-tested Heraeus quality!

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