



USHIO UV systems –
from lamps to power supplies
and electrics



Source: DecoRad®

What are UV lamps?

UV emitters, often referred to as UV lamps, belong to the family of discharge lamps. Unlike lamps with filaments, UV lamps contain two electrodes, between which a discharge arc occurs. Therefore, the distance of that arc is also described as the arc length.

UV emitters are filled with mercury and an inert gas (mostly argon). By adding further substances, the spectrum can be modified. This process is called doping and UV emitters that have undergone this process are so-termed doped emitters.

UV lamps are used for a vast number of applications like curing and coating of surfaces, paints and varnishes. They are also used for triggering chemical reactions, disinfection purposes and various other industrial applications. UV lamps provide you a solvent-free, fast, easy and efficient solution.

What is UV radiation?

UV radiation is electromagnetic radiation invisible to the human eye due to its short wavelength. Nevertheless, the energy content of UV radiation is significant and can be used in different processes:

UV-A RADIATION

Well-suited for the processing of glues, grouting compounds and polyester resins.

UV-B RADIATION

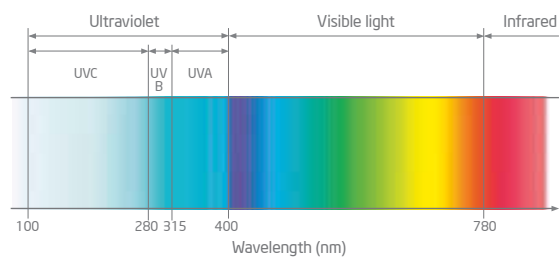
Applicable for the vitamin D production and photobiological processes.

UV-C RADIATION

Well-suited for the curing of varnish and paint as well as for disinfection.

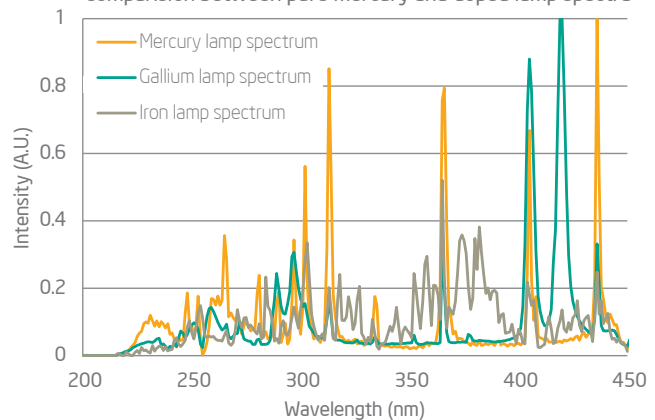
UV radiation is versatile. It varies in each case, according to which lamp design, doping and quartz glass is used.

UV spectrum



The graph shows the three most commonly used types: Mercury, Iron-doped and Gallium-doped lamps.

Comparison between pure mercury and doped lamp spectra



A significant characteristic of quartz glass is that it is transparent to UV radiation. It is also resistant to thermal shock and its softening temperature is distinctly higher than the one of other glass types. All these features make quartz glass the perfect choice for UV lamps.

USHIO: Where quality is customized

In the field of UV radiation, the majority of products is customized, because each application requires its specific treatment. That is why USHIO, the world market leader in state-of-the-art lighting technologies, offers not only UV lamps but also power supplies, UV modules for various applications and electrics for different processes.

With our team of specially trained engineers, we design, produce and test all our devices at USHIO in Germany and we develop individual solutions in cooperation with our customers to create the perfect fit.



UV lamps:
We provide the
one you need

Special features of USHIO UV lamps:

- Lamps with lengths of up to 2.7 meters are available.
- USHIO can produce pinched emitters with the advantage of a shorter total length given the same arc length.
- A unique feature for USHIO UV-emitters is the easy plug-in technology. With this technology, the exchange of lamps – even of customized ones – is extremely fast and easy. This plug-in system is individually adjustable and combines convenience and functionality. The emitter is electrically connected and at the same time mechanically mounted.
- USHIO offers the quickstart technology for emitters up to 10000W, which describes a special emitter design. After switching on the emitter, it only takes 3 to 5 seconds of run-up time.

Item number: 824039602

As most of the UV lamps are customized, this is only an extract of some UV lamps USHIO offers.



Item number: 824026902



Item number: 824095702



Item number: 824060802



Item number: 824054602



Item number: 824355002



Item number: 825310301



Item number: 825334902



Item number: 826074001



Switch it on – with electronic power supplies

The electronic power supplies of USHIO are purpose-built to operate the UV lamps. There are big and small types of power supplies with the following features:

- Developed and produced in Germany
- Compact construction
- Stable operation from low to maximum wattage
- Built with an integrated igniter
- Installation as a 19 inch rack mount module
- Short-circuit-proof, temperature monitored, output-controlled
- Tri-phase power connection without an N-conductor
- Output range from 1 to 36 kW with equal activation
- Stepless power control

Additional Electrics:

- Network control through an HFC-ETH converter
- Optional surge protection
- External, manually adjustable control panel

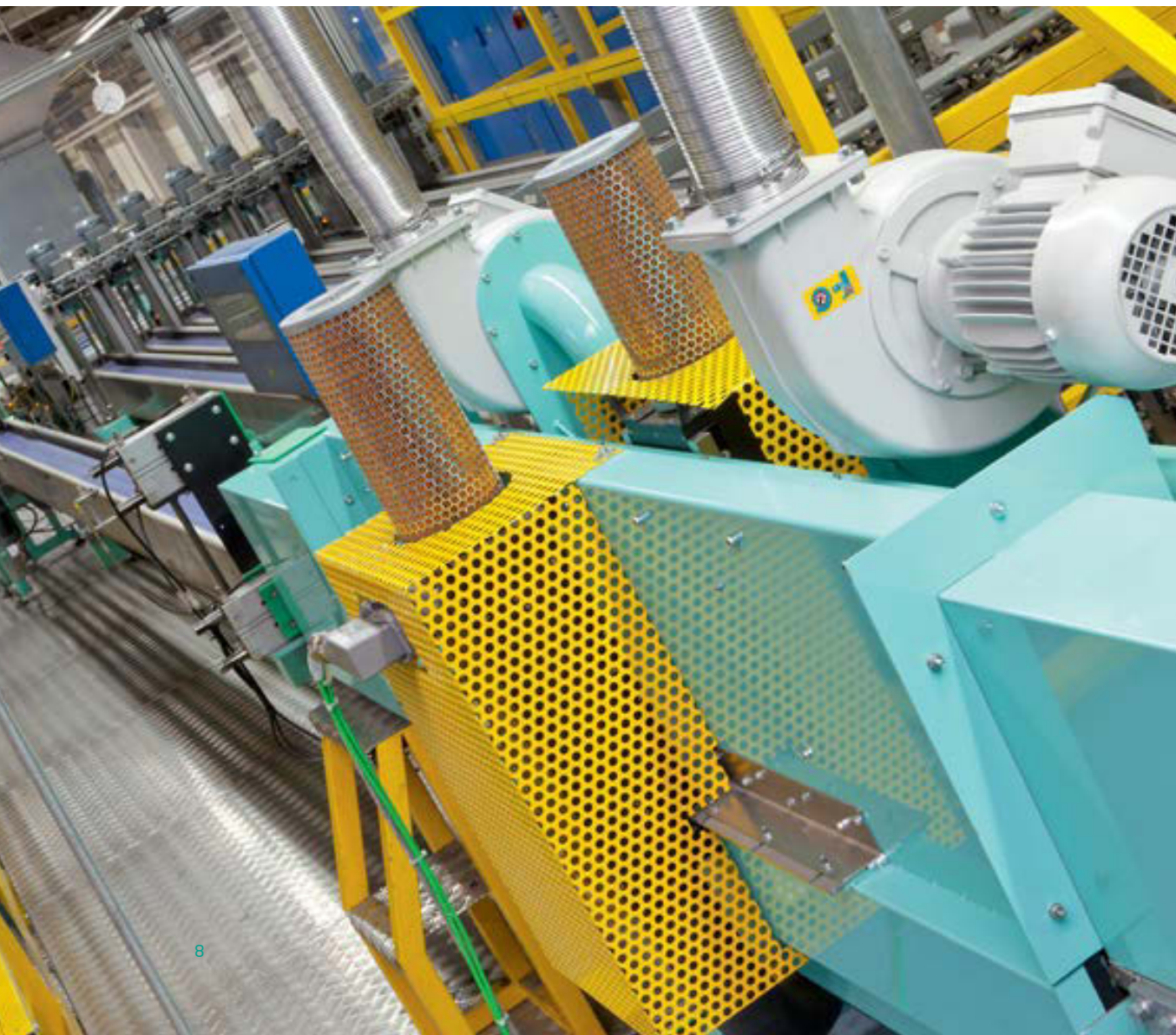
A selection of the most common devices

Device Marking	Lamp Current (rms)	Lamp Voltage (rms)	Lamp Power	Scaling current-voltage corresponding 10V Pin13/14	Housing	Weight
	A	V	W			kg
HFC3000 D12	20	350	3500	20A - 600V	Blech-D-sub	2.7
HFC3000 D16	15	450	3500	20A - 600V	Blech-D-sub	2.7
HFC3000 D22	11	600	3500	20A - 600V	Blech-D-sub	2.7
HFC4000 D12	20	350	4000	20A - 600V	Blech-D-sub	2.7
HFC4000 D16	15	450	4000	20A - 600V	Blech-D-sub	2.7
HFC4000 D22	11	600	4000	20A - 600V	Blech-D-sub	2.7
HFC4000 D12	20	350	4000	20A - 600V	19" / 4	2.7
HFC4000 D16	15	450	4000	20A - 600V	19" / 4	2.7
HFC4000 D22	11	600	4000	20A - 600V	19" / 4	2.7
HFC8000 Z12-7	20	700	8000	20A - 1200V	19" / 4	6
HFC8000 Z16-4	30	450	8000	40A - 600V	19" / 4	6
HFC8000 Z16-9	15	900	8000	20A - 1200V	19" / 4	6
HFC8000 Z22-6	22	600	8000	40A - 600V	19" / 4	6
HFC8000 Z22-12	11	1200	8000	20A - 1200V	19" / 4	6
HFC12000 Z12-10	20	1050	12000	20A - 1800V	19" / 2	8
HFC12000 Z16-14	15	1350	12000	20A - 1800V	19" / 2	8
HFC12000 Z22-6	33	600	12000	60A - 600V	19" / 2	8
HFC12000 Z22-18	11	1800	12000	20A - 1800V	19" / 2	8
HFC16000 Z12-7	40	700	16000	40A - 1200V	19" / 2	10
HFC16000 Z12-14	20	1400	16000	20A - 2400V	19" / 2	10
HFC16000 Z16-9	30	900	16000	40A - 1200V	19" / 2	10
HFC16000 Z16-18	15	1800	16000	20A - 2400V	19" / 2	10
HFC16000 Z22-12	22	1200	16000	40A - 1200V	19" / 2	10
HFC16000 Z22-24	11	2400	16000	20A - 2400V	19" / 2	10
HFC20000 Z12-17	20	1750	20000	20A - 3000V	19", 84TE	14
HFC20000 Z16-22	15	2200	20000	20A - 3000V	19", 84TE	14
HFC20000 Z22-30	11	3000	20000	20A - 3000V	19", 84TE	14
HFC24000 Z12-21	20	2100	24000	20A - 3600V	19", 84TE	16
HFC24000 Z16-14	30	1350	24000	40A - 1800V	19", 84TE	16
HFC24000 Z16-27	15	2700	24000	20A - 3600V	19", 84TE	16
HFC24000 Z22-18	22	1800	24000	40A - 1800V	19", 84TE	16
HFC24000 Z22-36	11	3600	24000	20A - 3600V	19", 84TE	16
HFC28000 Z12-24	20	2450	28000	20A - 4200V	19", 84TE	18
HFC28000 Z16-31	15	3150	28000	20A - 4200V	19", 84TE	18
HFC28000 Z22-42	11	4200	28000	20A - 4200V	19", 84TE	18
HFC32000 Z12-14	40	1400	32000	40A - 2400V	19", 84TE	20
HFC32000 Z12-28	20	2800	32000	20A - 4800V	19", 84TE	20
HFC32000 Z16-18	30	1800	32000	40A - 2400V	19", 84TE	20
HFC32000 Z16-36	15	3600	32000	20A - 4800V	19", 84TE	20
HFC32000 Z22-24	22	2400	32000		19", 84TE	20
HFC32000 Z22-48	11	4800	32000	20A - 4800V	19", 84TE	20
HFC36000 D12-31	20	3150	36000	20A - 5400V	special housing	22
HFC36000 D16-40	15	4050	36000	20A - 5400V	special housing	22
HFC36000 D22-18	33	1800	36000	60A - 1800V	special housing	22
HFC36000 D22-54	11	5400	36000	20A - 5400V	special housing	22

It's more than a lamp It's a whole system

USHIO does not only provide fine-tuned, long-life UV lamps and heads but also complete systems. We offer both standard, air-cooled systems as well as highly-innovative water-cooled systems. Latter are the perfect and highly efficient choice when there is confined space.

As we never see the head solitary, but as a component of a system, our aim is to always make it as convenient as possible for you. USHIO wants to fulfill your very specific requirements and make sure that the integration into your existing system is as easy as possible. This is ensured by the combination of high-quality USHIO lamps, USHIO power supplies and electrics.



Examples of excellence

The USHIO JetHead Series

The JetHead series represents our high-quality air-cooled UV head line for UV curing. Our broad product range of heads combined with the diversity of our UV lamps guarantees the suitable solution for every need.

We offer heads ...

- with and without turning shutters
- with parabolic, elliptic or round reflectors
- for vertical and horizontal lamp positions
- in different lengths to meet specific customer requirements

USHIO heads are connected with standard plugs making them easy to install and replace. The design of our heads is robust so that almost no maintenance is needed. Furthermore, we ensure that in all our heads the lamp can be replaced easily and quickly using standard tools.

The JetHead advantages at a glance:

- High-quality UV heads designed and produced in Germany
- A broad product range
- Optimized system for high curing-speed
- Easy integration into the system through modular construction
- Robust design for high reliability and little maintenance
- Fine-tuned thermal conditions to ensure a stable operation of the lamps
- Easy lamp replacement
- Optionally available with IR filtering
- Heads can be operated with various types of UV lamps (Ga, Fe, ozone creating, not ozone creating), so that a change of the lamp type is possible without changing the head

From basic to micro ...

The JetHead basic series

The JetHead Basic series is your easy and cost-sensitive entrance into the UV curing business. The robust heads are available with different reflectors like elliptic and parabolic ones. They can be operated with UV lamps with different fillings.

As all USHIO heads, the heads of the basic series have a finely-tuned temperature management that ensures a long lamp-life and little spectral segregations.

Advantages:

- Cost-sensitive
- Robust design
- Easy to integrate
- Fast lamp replacement



The JetHead micro series

The recently developed JetHead 5000 system, also called the JetHead micro series, is based on a revolutionary new combination of water-based cooling and spectral filtering. It is highly efficient and emits an infrared-reduced, cool UV radiation. Compared to other heads with the same UV power, the JetHead micro is the one with the smallest dimensions in the market, opening up completely new possibilities.

How it works

The JetHead micro system uses the IR-absorbing effect of water, having flowing water within a double glass-tube around the UV lamp. As most of the thermal energy is directly absorbed by the cool water, there is no risk of overheating anymore and no large air hoses or ventilators are needed. In addition, the housing of the UV head only gets lukewarm during operation, so thermal issues are not relevant for the installation anymore.

With this cool UV radiation the thermal stress on printing substrates can be minimized and cooling cylinders can be left out in the UV curing units. Thus, new systems are less expensive and furthermore the retrofitting of UV curing into existing systems gets significantly simplified.

Advantages:

- Smallest size in the market
- Cool housing and ultra-cool UV radiation
- Possibility to leave out cooling cylinders
- Easy to integrate into existing systems
- Strongly reduces thermal stress on the printing substrate
- Reliable, with extremely high quality, designed and built by one company
- Available with radiation powers reaching from 120 W/cm to 400 W/cm

Get to know more of our innovations



The USHIO UV sterilization devices

Our innovative disinfection and sterilization devices use high-quality, middle pressure UV lamps to achieve high power density. We manufacture very compact UV sterilization heads, which can easily be integrated into existing systems. The head and the electric are separate components that can be chosen for any given situation, so that the system can be integrated flexibly.

Our systems are by far the most compact ones on the market, achieving very good sterilization effects, which are tested and documented by independent third-party laboratories. Every system is designed in a way that it fits into the existing security and control system as well as into the actual machinery. Moreover the design of the device is neutral, stylish and robust.

The UV lamps in our disinfection devices run under ideal thermal conditions: Our optimized and efficient cooling technique makes it possible to use the existing clean, dust-free pressurized air supply while needing very little air flow (10 – 50 l/min under normal pressure). If no pressurized air is available, only small and efficient ventilators have to be installed.

Our unrivaled UV sterilization head

The UV head for our disinfection and sterilization system is applicable for the production of PET bottles. It is designed in a way that it can be mounted onto conventional blow moulders to disinfect the bottles from above at the end of the production process. So the PET bottle gets blown and disinfected in just one run. Next to the sterilization devices for PET bottles, there are also devices for caps available.

Moreover, the USHIO UV sterilization head minimizes the thermal stress for the goods to be disinfected. Due to its high-quality design and superior components, almost no maintenance is needed. The lamp replacement can be done fast and easy.



About USHIO

Beyond the visible spectrum

USHIO has earned its worldwide reputation by developing products that integrate state-of-the-art lighting technologies and designs with the specific application needs of industry-leading clients in a wide range of fields: from cinema projection, semiconductors and office automation to biotechnology or medicine. With about 5.700 employees and an annual turnover of nearly € 1.5 billion the USHIO group is one of the world's leading providers of lighting-edge technology products. The majority of the USHIO UV-portfolio is developed and manufactured in Germany. Our high-end production and quality management complies the ISO 9001 certification.

USHIO's spectral solutions include a wide range of gas discharge lamps and halogen lamps designed to meet the precise needs of diverse applications. Rely on our experience and on our innovation power and you will be convinced of our spectral solutions, services and devices.

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