



UTARGET™ MANUAL



UTARGET™ AUTO



Before use, please take the time to read this datasheet and make sure you understood the advices and cautions of use.



User security

- Do not watch directly the beam of light or through any optical instrument.
- Avoid any contact with the LEDs or its lens.
- Code IP40: protected against solid corpses larger than 1 mm and non-protected against water intrusion.
- Use the product in an environment where the working temperature is between +15°C and +35°C and there is little humid air (<80%): if those conditions are not respected the product can be damaged.
- Do not use the product in an environment where smokes and oil vapors are present.
- Never try to repair by yourself any potential damages on the product.
- Make sure to use the right power supply before connecting the product.
- Do not reverse the electrical polarity – check your connections and the conventions before turning on the product.
- Make sure you have the correct connector to link the product to the power supply.

Any incorrect use cancels the warranty.

Table of contents

User security	1
Eyes & Skin Safety	3
Legal obligations	4
Possible health damages	4
Protective equipment	5
Technical Overview	8
Product reference	9
Optical characteristics	10
Mechanical dimensions	12
How to use: UTARGET MANUAL	13
How to use: UTARGET AUTO	15
Signals (UTARGET™ AUTO only)	17
Accessories	18



Eyes & Skin Safety



UWAVE products come under the standard DIN EN 62471:2008 which classified sources of optical radiation into risk groups subject to their potential photo biological hazard. Due to the emission of high UV irradiation, our products belong to Risk Group 3 (hazardous even for momentary exposure) therefore special safety measures, detailed in the following, must be observed.



To protect the eyes and skin staff everyone in the area must wear **protective equipment**. Protective **goggles** should comply with the standard EN 170 (Personal eye-protection - Ultraviolet filters - Transmittance requirements and recommended use). The goggles must protect eyes against direct and side irradiation.



Don't look directly at the product's output window because of a risk of becoming blind.
Don't expose skin too long without protection to avoid skin burning or cancer.



Due to the high emission power, the area near the LEDs can reach high temperature during operation.
Avoid touching directly the product and especially the output window.



Legal obligations

Under the law at present, workers' exposure must be lower than the Exposure Limit Value (Directive 2006/25/EC of the European Parliament). Depending on the wavelength of the product and the body part insolated, **Limit Values are summarized in the tables below:**

	Eye	Skin
Wavelength	315 – 400 nm (UVA)	180 – 400 nm (UVA, UVB, UVC)
Exposure Limit Value	10 000 J/m ²	30 J/m ²

Case study with a LED at 365 nm with an Optical Power of 10 mW/cm²:

For the **eyes**, the maximal exposure time (Δt), the Exposure Limit Value (*ELV*), and the Optical Power (*P*) of a UV product are linked by the formula:

$$\Delta t = \frac{ELV}{P}$$

For **skin**, the Optical Power is normalized by skin's sensitivity factors for each wavelength.

The maximal exposure time per day is calculated below:

	Eyes	Skin
Optical Power (normalized for skin)	10 mW/cm ²	4,7 µW/cm ²
Maximal exposure time per day	1 min 40 s	12 min

With a UV product with an optical power of 10 mW/cm², the Exposure Limit Value per day is **reached in 2 minutes for eyes and 12 minutes for skin** without any safety equipment. Therefore, protective equipment is needed when a UWAVE UV LED equipment is used.



Possible health damages

Effects on skin along unprotected UV exposure



Erythema (sunburn)
Skin inflammation

Skin cancer

Skin ageing

Burning, inflammation, chronic diseases

Effects on eyes along unprotected UV exposure



Conjunctivitis
Inflammation of the conjunctiva

Keratokon
Inflammation of the cornea

Cataracts
Eye's clouding

Visual strain, inflammation, blindness



Protective equipment



Eyes protection



Safety goggles prevent UV damages to eyes.

REF: UGLASS-02

- Certified NF EN 170 absorbing 99,9% of UV radiation and visible light up to 532nm
- Protect against side irradiation
- Resist to chemical products and scratches

Beyond 2 minutes per day of eye UV LED exposure at 10 mW/cm², protective goggles are necessary according to the European Directive 2006/25/EC.



Safety face shield prevents UV damages to eyes and skin's face.

REF: UMASK-01

- Certified NF EN 170 absorbing 99,9% of UV radiation and visible light up to 400nm
- Protect against side irradiation
- Resist to scratches

Beyond 12 minutes per day of face UV LED exposure at 10 mW/cm², protective mask is necessary according to the European Directive 2006/25/EC.



Body protection



Safety gloves prevent UV damages to exposed skin.

REF: UGLOVE-01

- High protection against UV radiation
- Resist to chemical products and scratches

Beyond 12 minutes per day of hands UV LED exposure at 10 mW/cm², protective gloves are necessary according to the European Directive 2006/25/EC.



Safety jacket and trousers prevent UV damages to exposed skin, especially arms & legs.

- Certified UPF 50+ absorbing more than 90% of UV radiation
- Durable and resistant

REF (jacket): UJACK-01

REF (trouser): UTROUS-01

Beyond 12 minutes per day of arms & legs UV LED exposure at 10 mW/cm², protective clothes are recommended according to the European Directive 2006/25/EC.



Protection suit prevents UV damages to entire body, especially neck.

REF: USUIT-01

- Certified UPF 50+ absorbing more than 90% of UV radiation
- Resist to chemical products

Beyond 12 minutes per day of neck UV LED exposure at 10 mW/cm², protective suit is recommended according to the European Directive 2006/25/EC.



UV source isolation



UV shields are protective windows which isolate the UV insulated zone to protect all workers around.

They are made to measure to fit with your constraints.

REF: USHIELD-01

Beyond 2 minutes per day of eye UV LED exposure and 12 minutes of skin UV exposure at 10 mW/cm², protective shields are necessary to protect staff without safety equipment according to the European Directive 2006/25/EC.



Warning stickers



Warning stickers inform workers of radiation danger and invite them of wearing protection equipment. They are available in 3 sizes:

- 55 mm x 25 mm
- 165 mm x 75 mm
- 290 mm x 130 mm

REF: USTICK-01

REF: USTICK-02

REF: USTICK-03



Expertise

Our UV LED experts from UWAVE can come and check your production lines to:



Measure UV irradiance to **determine the maximum UV personal exposure time** compared with limits (European Directive 2006/25/EC).



Determine the most **adapted solution** to protect workers' eyes and skin.



Contact us to get our expertise. We will find together the equipment which fits with your application.



Technical Overview

The UTARGET™ exists in 2 versions:

- The UTARGET™ MANUAL is held like a pen and controlled by hand. It is connected to a main socket.
- The UTARGET™ AUTO is integrated into an automatic process and controlled by a PLC or a footswitch.

		UTARGET™ MANUAL	UTARGET™ AUTO
Electronics 	Power supply	24V DC	
	Illumination mode	10 Levels between 0% to 100% of light intensity	Continuous with a DIM process [0-24V]
	Connector	Jack Connector	Lemo 0b – 4 pins
	Power consumption	~ 4W	
Optics 	Wavelength	365 or 385 or 395 or 405 nanometers	
	Irradiance	Up to 20 000 mW/cm ²	
Mechanics 	Diameter	36 mm (head) and 22 mm (body)	
	Length	150 mm	
	Material	Device body: Aluminum alloy	
	Weight	130 g	
Thermal 	Cooling system	Passive	
Environment 	Working temperature	+15°C to +35°C	
	Working Humidity	< 80% for temp < 35°C	
	IP Code	IP40	



Product reference

UTARGET™ Manual:

UTARGET - XXX*

365

385

395

405

*XXX corresponds to the wavelength of the product

UTARGET™ AUTO:

UTARGET - XXX* - AUTO

365

385

395

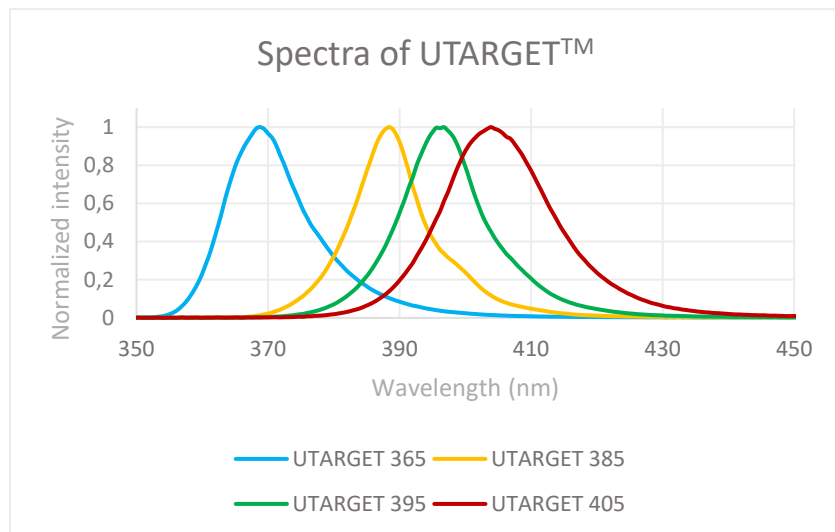
405

*XXX corresponds to the wavelength of the product



Optical characteristics

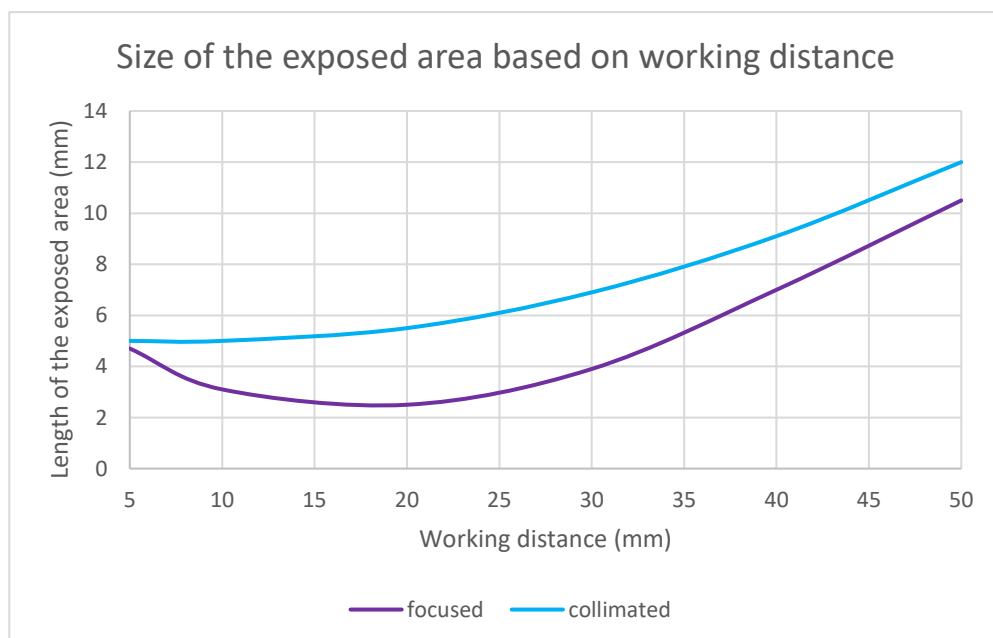
Spectra



	Pic Wavelength	Full width at half maximum
UTARGET 365	368 nm	14 nm
UTARGET 385	388 nm	10 nm
UTARGET 395	397 nm	14 nm
UTARGET 405	404 nm	18 nm

Size of the exposed area

Thanks to its optical system, you will be able to change the size of the spot emitted by the UTARGET™. In the following graph, the area exposed is the area where the irradiance is higher than 50% of the maximum irradiance.



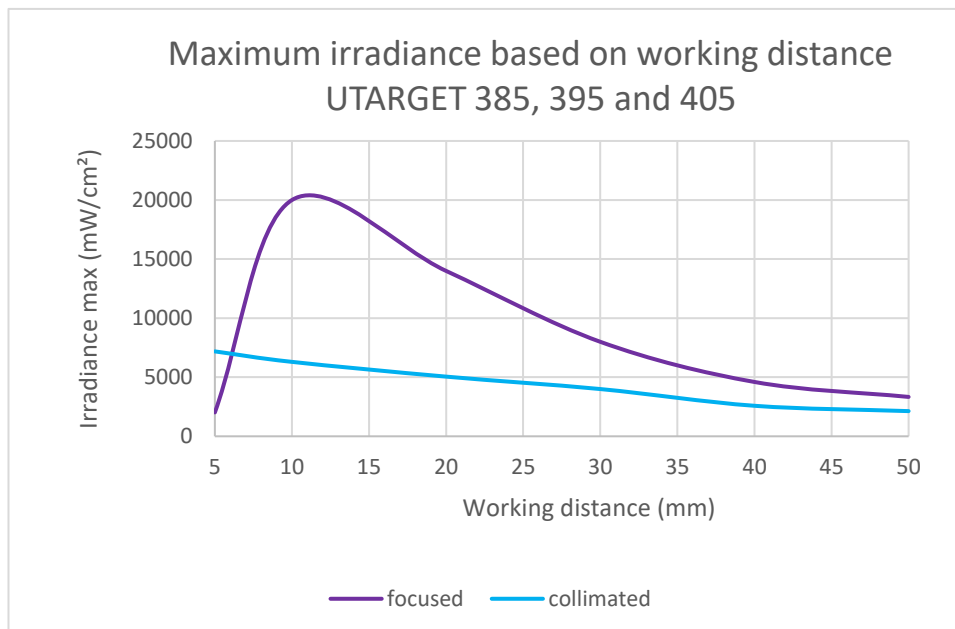
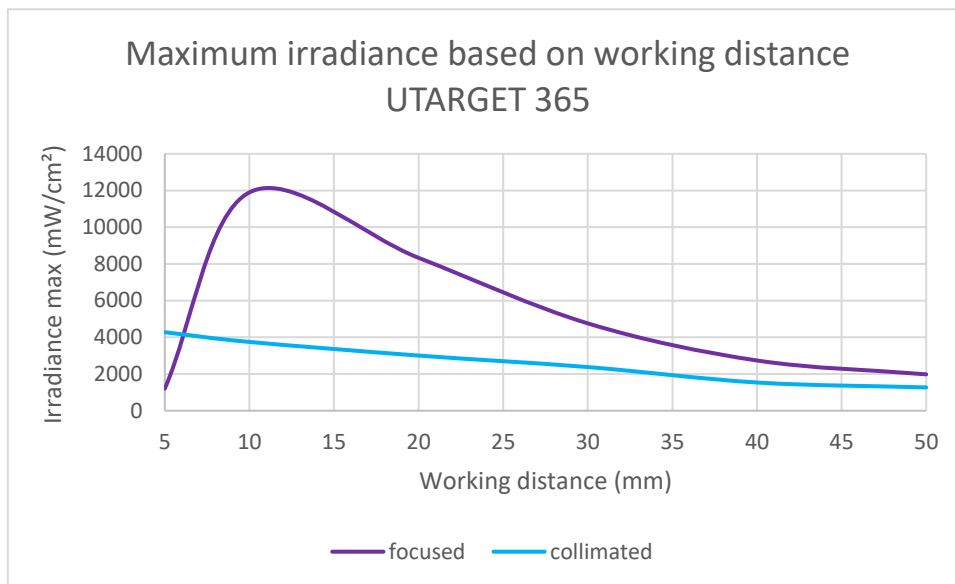
Focused position



Collimated position

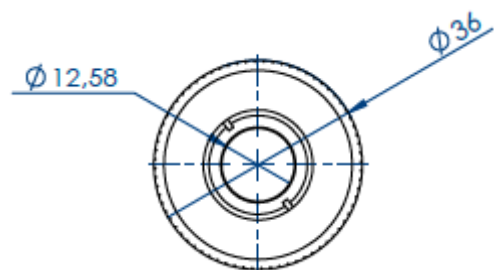


Photometry

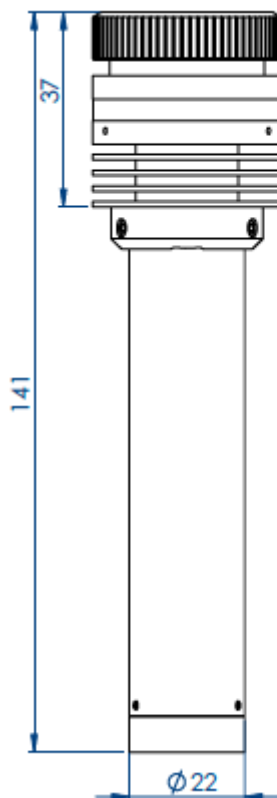




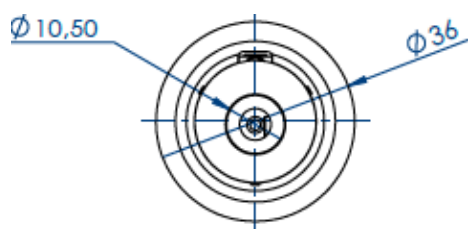
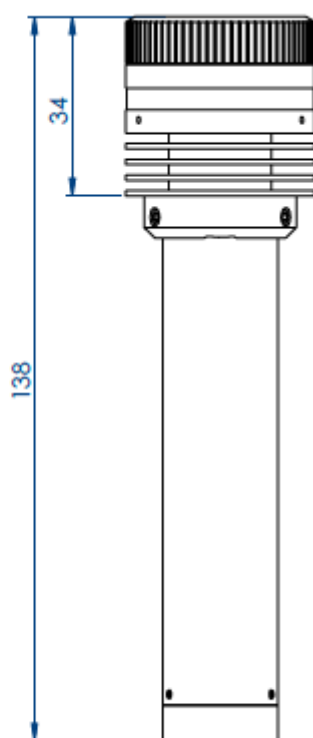
Mechanical dimensions



Focused position



Collimated position



Dimensions are the same for the UTARGET and the UTARGET AUTO



How to use: UTARGET MANUAL

Before following the steps below, make sure you have considered the security part regarding UV emission. Then you can follow these steps and make a quick and safety start.

Steps	Illustrations
Connect the electrical plug into the socket.	
Plug the jack connector into the UTARGET™ and Check your electrical connection thanks to the red light on the UTARGET™ body which has to turn on.	
Press the power button to turn the UTARGET™ ON. The green light on the UTARGET™ body should turn on.	
The UTARGET™ (at 100%) is ready to be used. Use the buttons – (less) and + (more) to control the light intensity from 20% to 100%.	

Information about the two status LEDs

Green LED		Red LED		Situation
OFF		OFF		The UTARGET™ is not plugged
OFF		ON		The UTARGET™ is plugged to an electrical source but does not emit UV
ON		OFF		The UTARGET™ is plugged to an electrical source and emits UV
ON		ON		The UTARGET™ is ON and it is at 100% of its power
BLINK		OFF		Change of the light intensity after pushing the button (+) or (-)
OFF		BLINK		Preventing the UTARGET™ from overheating





How to use: UTARGET AUTO

With the UPOWER™

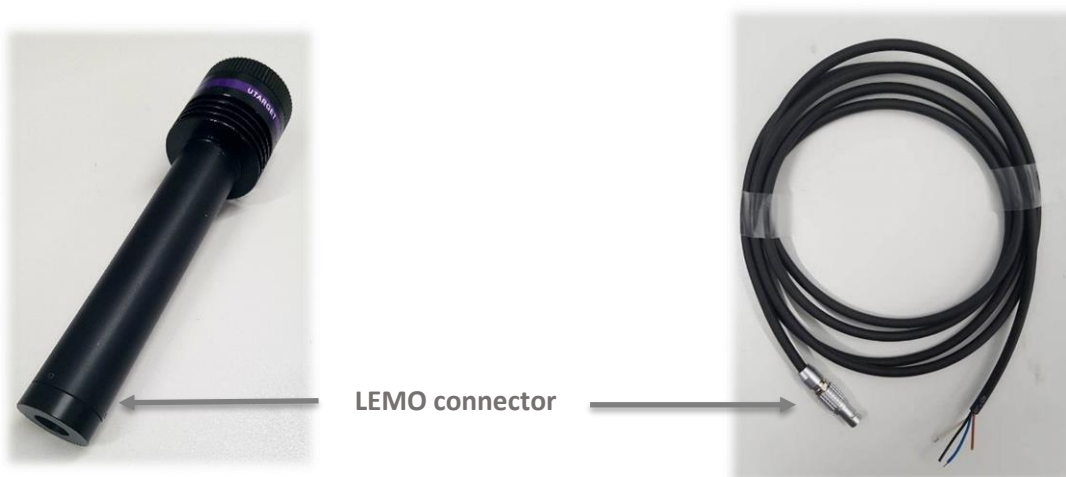
The UTARGET™ AUTO can be provided with its power supply UPOWER™.

Steps	Illustrations
Connect the cable M12 – 4 pins between the UTARGET and the UPOWER. The connector for the UTARGET™ AUTO side is a LEMO connector.	 Plug M12 – 4pins
Plug the UPOWER™ to a 230V outlet.	
The UTARGET™ AUTO is ready to be used. To turn the UTARGET on, you can either use the buttons ON on the UPOWER, or use a foot pedal (more details in “ACCESSORIES”) or connect the UPOWER to your PLC.	Footswitch STOP button ON button 
How to choose the light intensity Use the light intensity controller buttons on the UPOWER to control the light intensity from 20% to 99%.	 Light intensity controller

How to choose the exposure time Use the TIMER interface on the UPOWER to choose the exposure time. The red timer is fixed, and the orange timer is the one that you can change. To validate the time, push the reset button on the timer.	 TIMER
How to lock the UPOWER Turn the lock key in order to lock the timer configuration. The word "LOCK" appears on the timer screen.	 Lock Key

Without the UPOWER™

The UTARGET™ AUTO can be used without the UPOWER in order to directly supply it by yourself by using a PLC. To connect your PLC to the UV product, use the cable by following the board below.

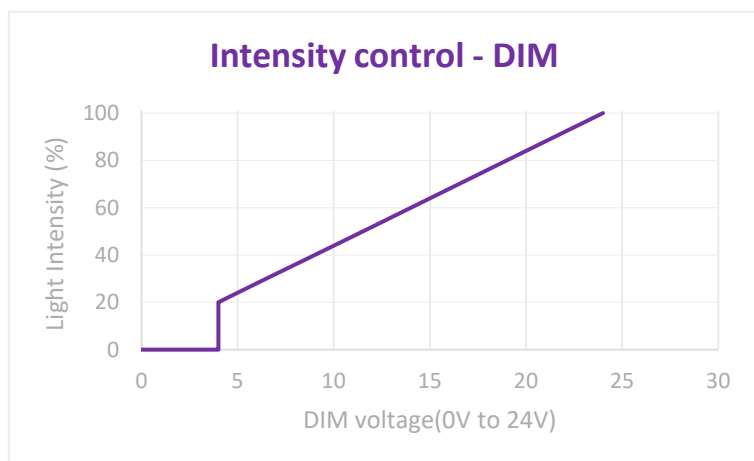


Cable color	Input / Output signal	Designation	Signal	
Brown	In	Power supply +	24V DC	
White	Out	Temperature Fault	24V	No Fault
			0V	Fault
Blue	In	Power supply -	0V	
Black	In	Intensity Control - DIM	0 → 24V or look at the graph below	



Signals (UTARGET™ AUTO only)

Intensity Control



The UTARGET™ is supplied with a 24V constant voltage source.

Using the DIM pin, the light intensity can be controlled:

- 0V to 4V – OFF (0%)
- 4V to 24V – 20% to 100%

Max DIM power consumption: 30 mW @24V



Accessories

Photo	Description	UTARGET™ MANUAL	UTARGET™ AUTO
Glasses 	Safety glasses, prevent UV damages to your eyes. Reference: UGLASS-02	✓	✓
Cables UTARGET™ Manual 	Reference: • UCAB-UTAR-JACK for the 1,5 meter cable connecting the electrical transformer to the UTARGET (jack connection). • UCAB-UTAR-SECTOR for the 1,8 meter cable connecting main supply to the electrical transformer.	✓	
Cables UTARGET™ Auto 	Both sides connectors (UPOWER™ link): Reference: UCAB-LEMOM12-FM-4-DD-L 5 } Depending on the length you want (in meters) 2 } 10 } One side with bare wire (towards PLC): Reference: UCAB-LEMO-FD-4-D-L 5 } Depending on the length you want (in meters) 2 } 10 }		✓
Support 	The support allows you to put down the UTARGET™ between uses Reference: HOLDER-UTAR	✓	✓