Ideal for **photostereo vision** application

Intense and **homogeneous** spot light

Standard connections and fasteners

Flexible: Adjustable working distance [50mm,2000mm] / Adjustable illuminated area [100mm^2 ,1m^2]

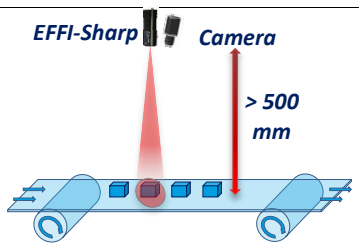
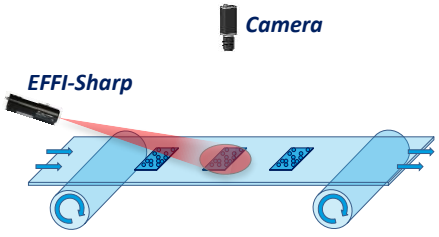
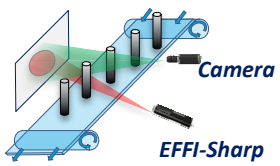
From **UV to IR**, white / Various projected patterns

Long lifetime and few maintenance

Compatible with most objectives

		Standard version	Power version
Electronics	*Connectors*	M12 4 Contacts (with LED driver) OR M8 3 Contacts (direct current)	
	Power supply	24V DC	
	Illumination mode	Continuous or strobe mode	
	Power consumption	5W	15W
Optics	*Wavelength*	Various wavelengths (from UV to IR, white)	
	Projection system	Near Field, Middle Field, Far Field and any C-mount objective	
	Projected pattern	Circular, square and custom patterns	
Mechanics	*Dimensions*	According to the Version	
	Focusing adjustment	A M3 screw on the objective	
	Fastener	4X M4 holes on the side of the device	2 M4 holes and 1 M6 hole on the backside of the device
	Material	Device body: Aluminum alloy	
Environment	*Working temperature*	0°C to 50°C	
	IP code	IP54	

Applications

Sharp standard	Sharp Dark-field	Sharp Back-light
Great distance illumination producing sharp edged spots	Tangential illumination for carved codes reading, cleavages inspection, edges view enhancing	Creation of a backlight illumination going between objects
		

Part Number

Reference:
EFFI-SHARP-VVV-XX-YYY-Z

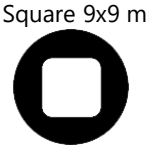
VVV : Power Version & XX : Objective & Working distance & Power version

	EFFI-Sharp		EFFI-Sharp PWR More powerful		EFFI-Sharp FL More focused	
VVV: Power version	EFFI-SHARP-XX...		EFFI-SHARP-PWR-XX...		EFFI-SHARP-FL-XX...	
XX: objective	**Typical working distance (mm)**	**Illuminance**	**Typical working distance (mm)**	**Illuminance**	**Typical working distance (mm)**	**Illuminance**
NF: Near Field	100 - 800	100 000 Lux at 100 mm	100 - 800	250 000 Lux at 100 mm	40 - 70	1 000 000 Lux at 50 mm
MF: Middle Field	400 - 1600	5000 Lux at 500 mm	400 - 1600	12 500 Lux at 500 mm	80 - 120	300 000 Lux at 100 mm
FF: Far Field	500 - 1800	650 Lux at 2000 mm	500 - 1800	1500 Lux at 2000 mm	150 - 300	150 000 Lux at 180 mm
CM	To adjust a C-mount objective.					

YYY : Wavelength (nm) / Color

● UV 365	● UV 405	● Blue 465	● Green 525	● Red 625	● IR 850	○ White 000 (T°= 5500 K ± 500 K)

Z : Part number of the shape / Pattern projection (If not specified, default 2)

1 : Square 9x9 mm	2 : Disc Ø15.1 mm	3 : Half moon R = 9.5 mm
		

Option Polarizer

Without polarizer

With polarizer

If polarizer, add **-POL** in the part number.

Part number: EFFI-SHARP-VVV-XX-YYY-Z-**POL**

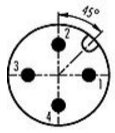
Option Driving control

Strobed Version allows to inject more current in the LEDs and so to obtain a lighting more powerful.
Caution : Direct current = no protection
If strobe, add -STR in the part number
Part number: EFFI-SHARP-VVV-XX-YYY-Z-**STR**

Electronical considerations

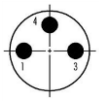
Contact arrangement

The EFFI-Sharp, EFFI-Sharp PWR & EFFI-Sharp FL are powered by a constant voltage 24V with the EFFI-Supply cable (attached to the projector).
Power consumption = 5 W for Standard version & 15 W for Power version.

Drived Version : M12 male connector			
Contact arrangement	**Number**	**Color Contact**	**Designation**
	1	Brown	+24V
	2	White	n.a.
	3	Blue	GND
	4	Black	DIM - max 15V Consumption = 2mA @15V

A current source can be used to power the EFFI-Sharp in STR version (direct control). The power consumption depends on the intensity whiwh flows in the LED.

In expert mode, the LED is wired directly to the M8 : no protection for the LED !

M8 connector – direct control (expert mode)			
Contact arrangement	**Pin number**	**Color contact**	**Designation**
	1	Brown	n.a.
	2	Blue	+ Max 700mA dc
	3	Black	GND

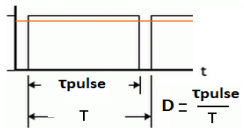
Power supply

The projector, supplied with a 700mA constant current, is considered as the reference. The frequency of the cycle (ON & OFF) has been fixed to 10Hz. Be aware that the maximum duty cycle for a given current, given in the following table, cannot be exceeded.

The maximal duty cycle (D) dependent on the injected current, required to safely pulse the LED projector is defined by:

Config.	Current	Max pulse duration (µs)	D
1	1.2A	50000	0.5
2	1.5A	10000	0.1
3	2A	1000	0.01
4	2.5A	100	0.001
5	3.5A	40	0.0004

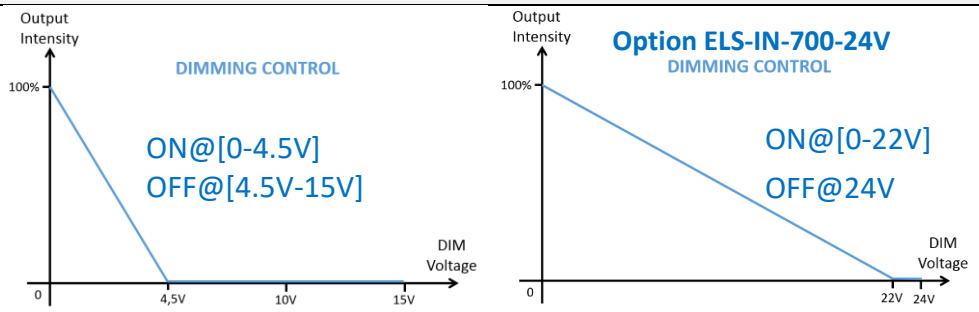
G_{max}	405 nm	465 nm	525 nm	590 nm	625 nm	850 nm	White
Config. 1	1.5	1.4	1.4	1.5	1.6	1.5	1.4
Config. 2	2	1.8	1.7	2.1	2	1.8	1.7
Config. 3	2.6	2.2	2.1	2.7	2.6	2.4	2
Config. 4	3.2	2.6	2.3	3.4	3.2	2.9	2.4
Config. 5	4	3.1	2.9	4	4.4	3.6	2.8



$$G_{max} = \frac{luminous\ flux\ (I_{max})}{luminous\ flux\ (I_{700mA})}$$

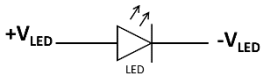
Electrical control

DIMMING CONTROL – ONLY WITH THE ELECTRONICAL STANDARD VERSION (M12)

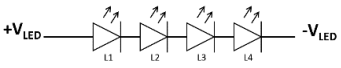


STR : Electrical scheme

Standard version :



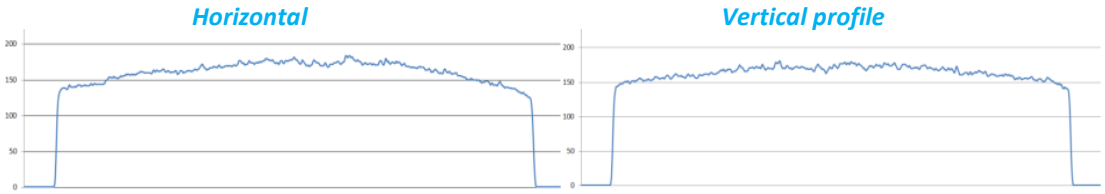
Power version :



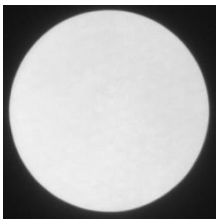
Optical considerations

Uniformity of the pattern

Measurements achieved with a rounded pattern (Ø15mm)



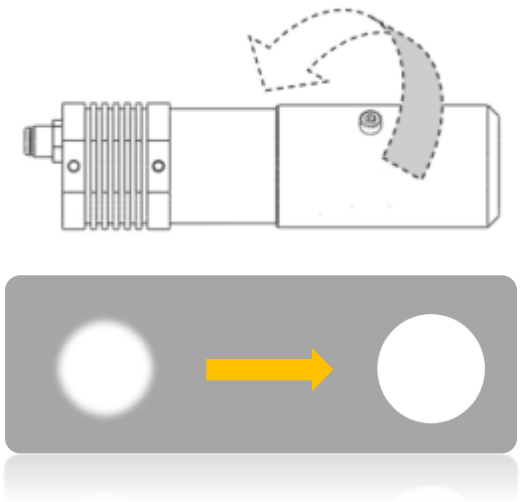
Uniformity higher than 80%

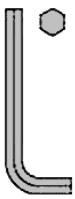


Adjust optical configuration

If the lens projection is dirty, please use a clean tissue and a liquid dedicated to optical cleaning carefully on the surface to clean.

To adjust the device to obtain sharp edges :

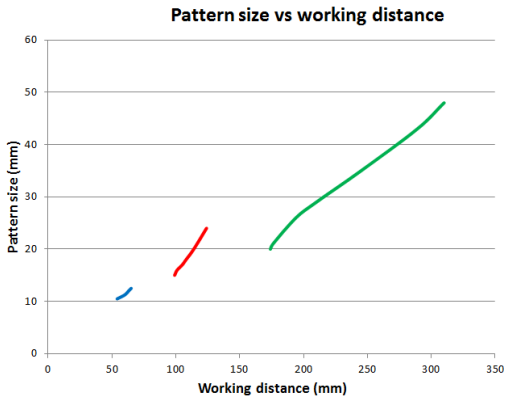




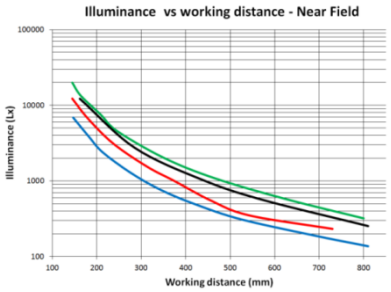
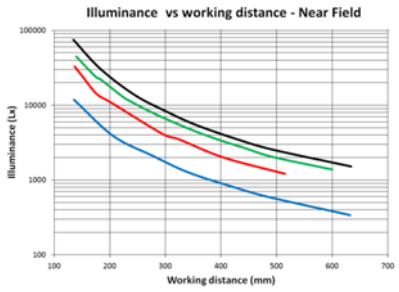
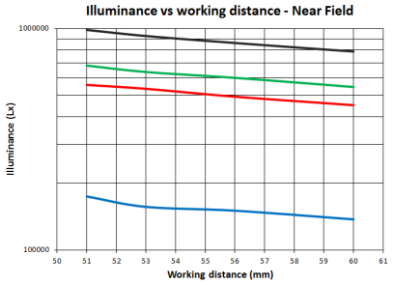
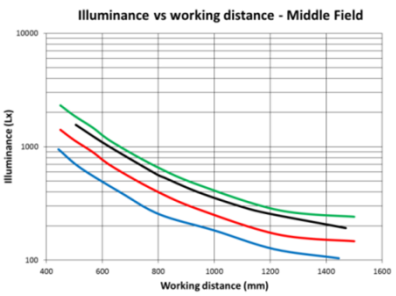
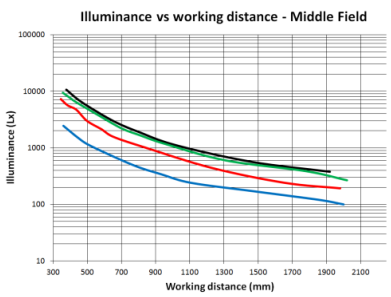
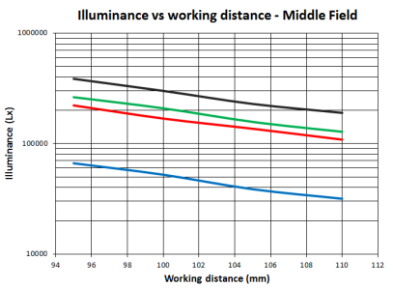
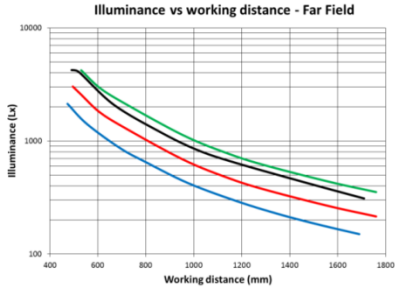
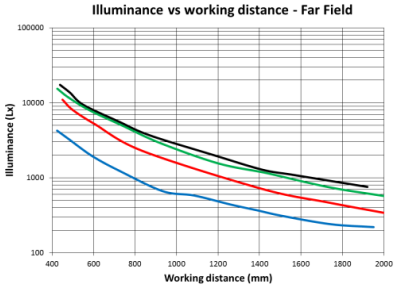
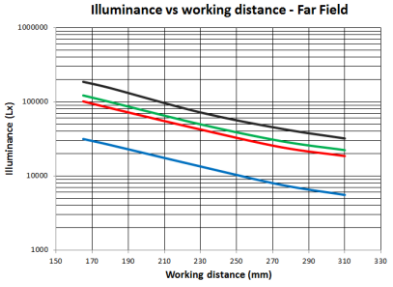
Hex Key
Size: 2.5

1. Loosen and **not unscrew totally** the screw
2. Rotate the projection head until you obtain sharp edges
3. Screw slightly the screw to lock the focus adjustement

Pattern size

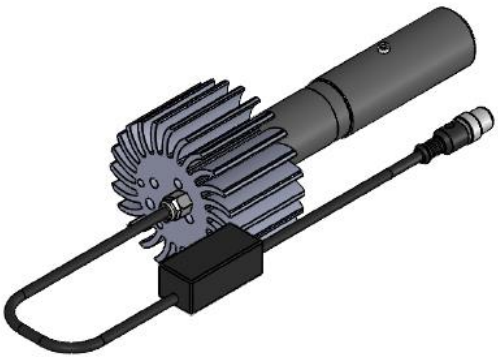
EFFI-SHARP / EFFI-SHARP-PWR	EFFI-SHARP-FL
Curve color ≡ Objective: NF (Near Field) / MF (Middle Field) / FF (Far Field)	
	

Illuminance vs. the working distance

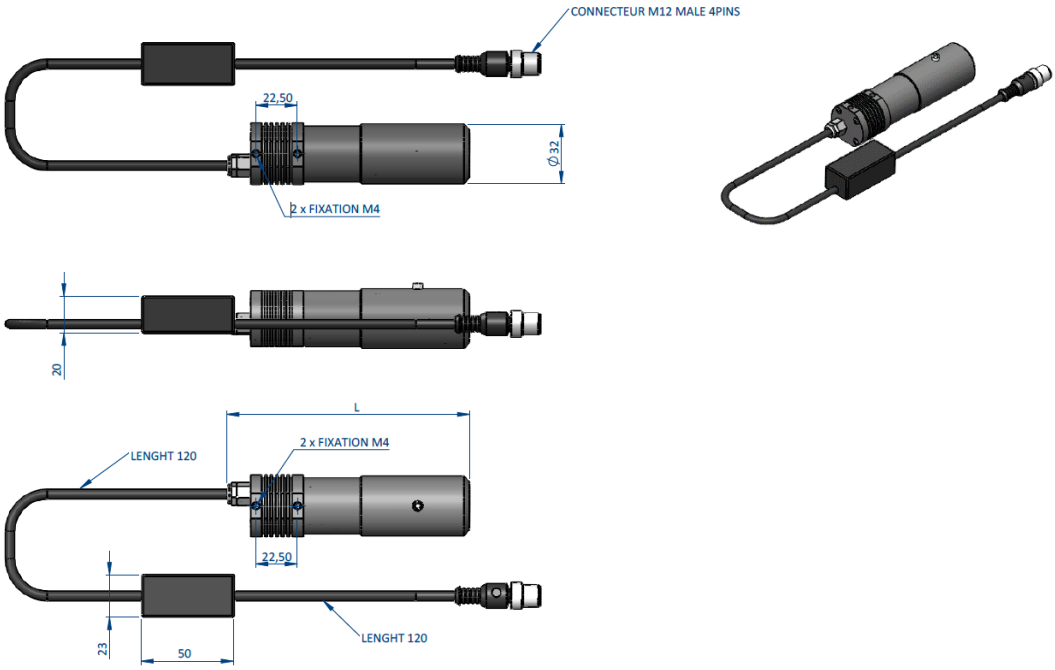
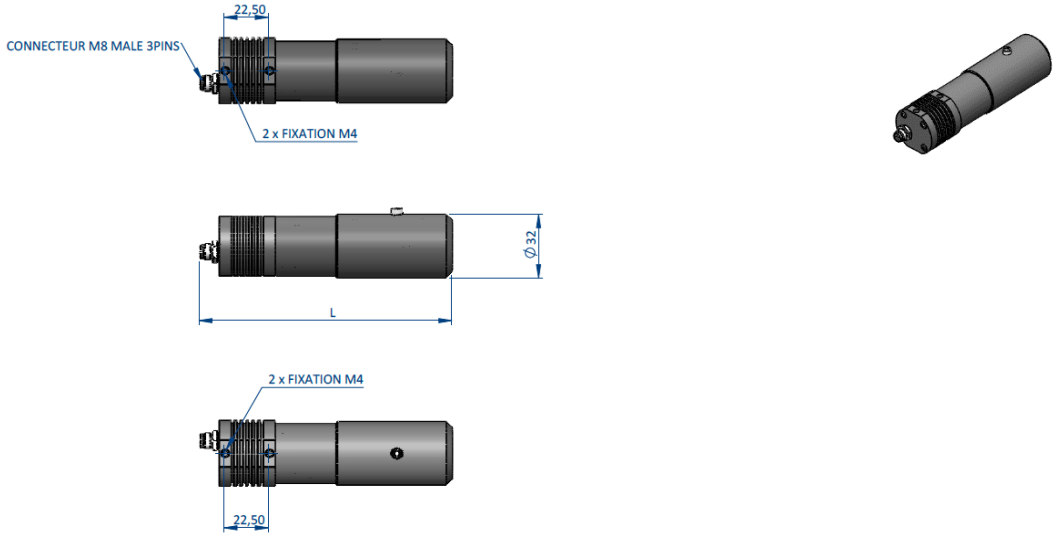
	EFFI-Sharp	EFFI-Sharp PWR	EFFI-Sharp FL
	Curve color ≡ Wavelength of LED: Blue / Red / Green / White		
Near Field			
Middle Field			
Far Field			

A sharp image is obtained by turning the device's ring in one or another direction until the image is in focus (first, loose carefully the M3 screw present on the objective tube).

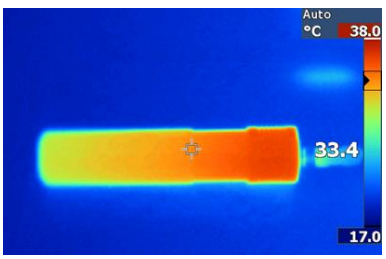
Mechanical considerations (Dimensions in mm)

	Standard connection (M12 connector) With Driver	Specific strobe connection (M8 connector) Direct current : **-STR**
EFFI-SHARP		
EFFI-SHARP-PWR		
EFFI-SHARP-FL		
EFFI-SHARP-PWR-FL		

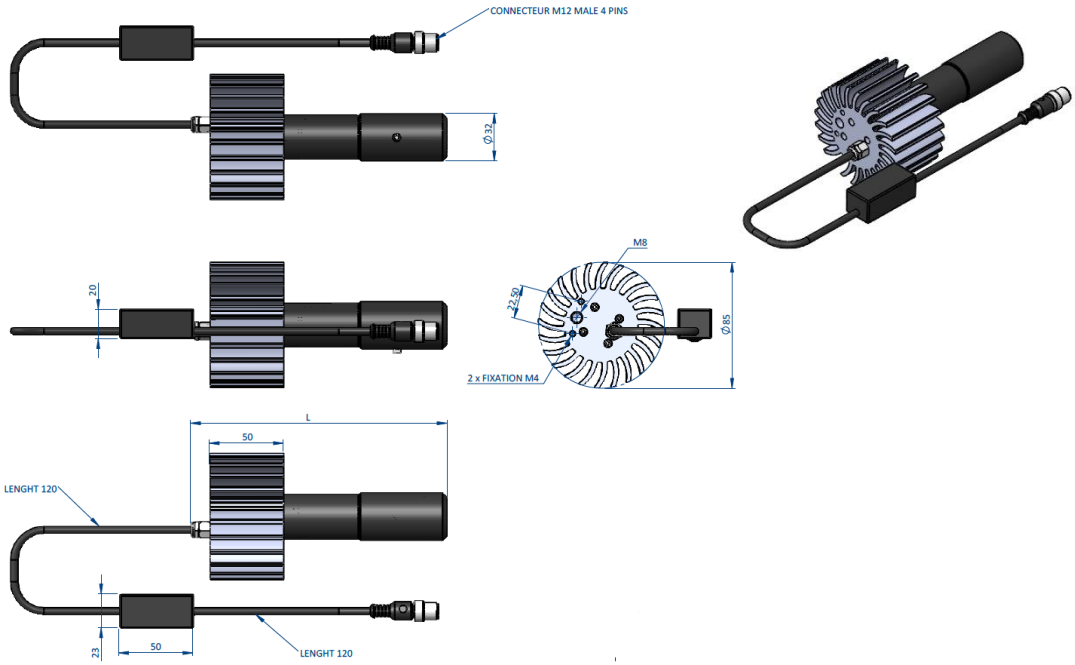
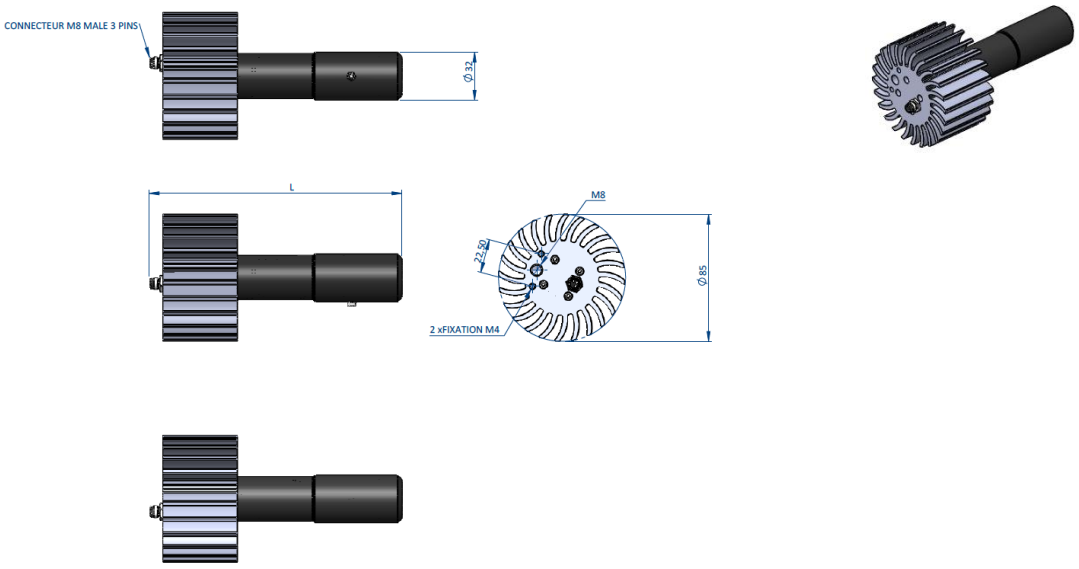
Standard Version

	Standard Version : EFFI-SHARP
Standard connection (M12 connector) With Driver	
STR connection (M8 connector) Direct current	
Length according to the **objective version**	

	NF	MF	FF
Min L (mm)	123	128	144
Max L (mm)	135	144	178

Thermal considerations Thanks to its design, the heat is efficiently dissipated from the LED	

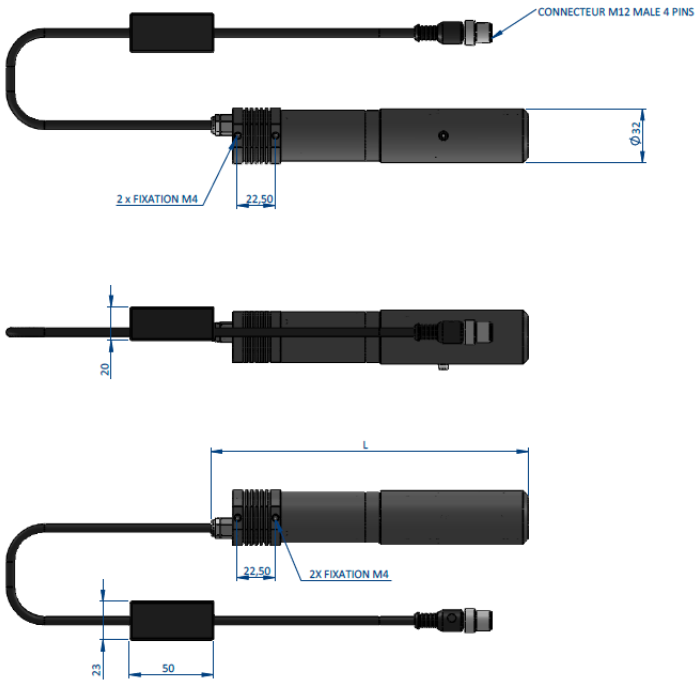
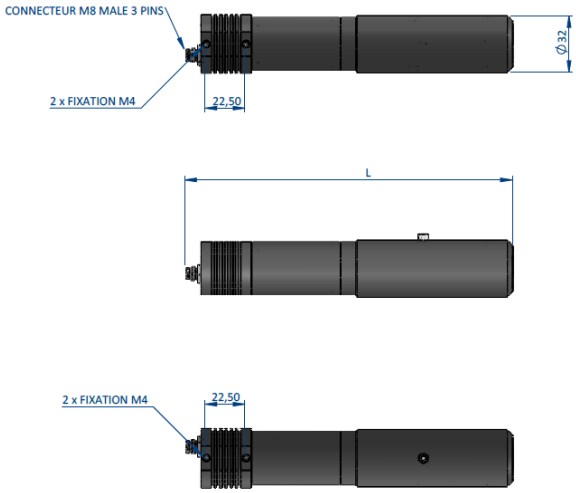
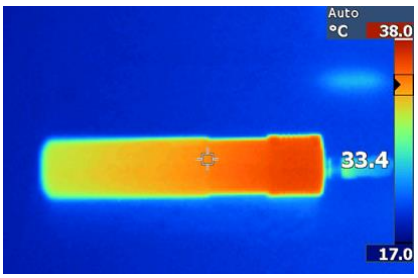
Power Version

	Power Version : EFFI-SHARP-PWR
Standard connection (M12 connector) With Driver	
STR connection (M8 connector) Direct current	
Length according to the **objective version**	

	NF	MF	FF
Min L (mm)	144.5	149.5	165.5
Max L (mm)	156.5	165.5	199.5

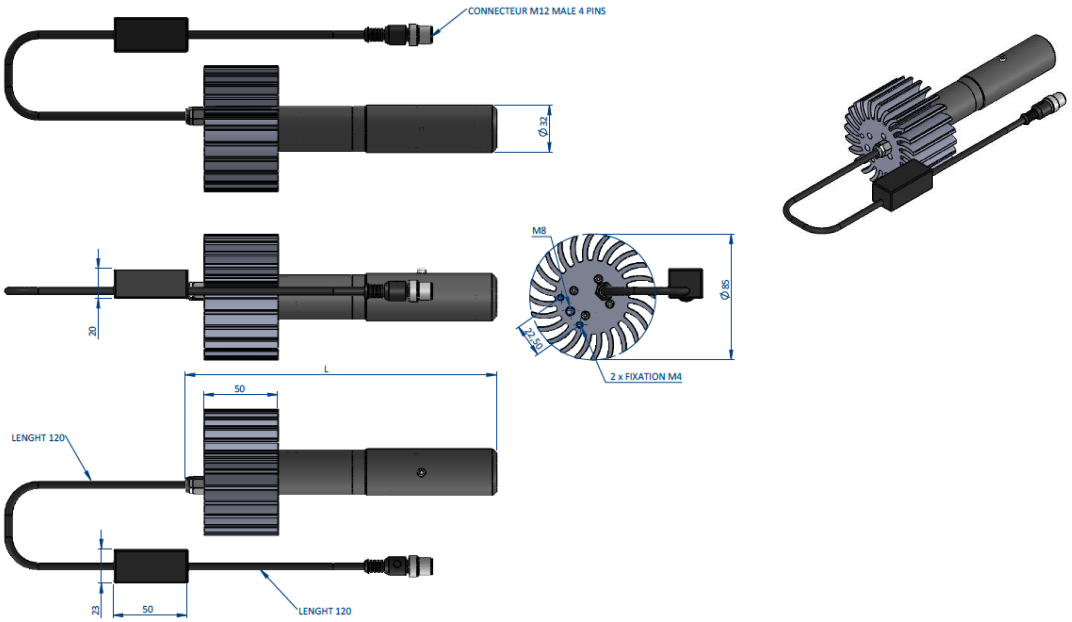
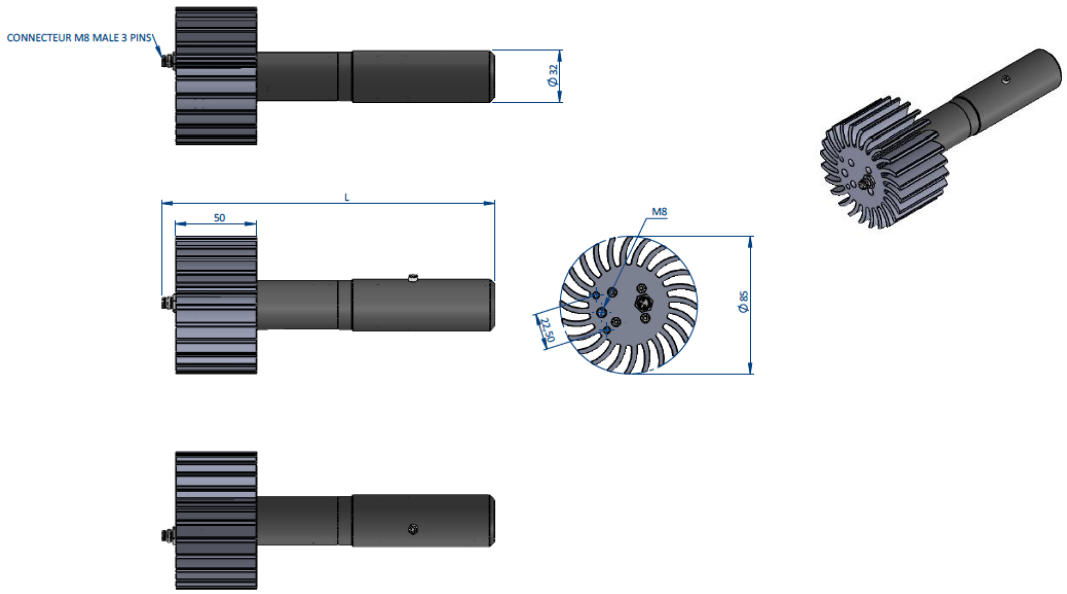
Thermal considerations Thanks to its design, the heat is efficiently dissipated from the LED	

Focus Light Version

	Power Version : EFFI-SHARP-FL
Standard connection (M12 connector) With Driver	 
STR connection (M8 connector) Direct current	 
Length according to the **objective version**	
Thermal considerations Thanks to its design, the heat is efficiently dissipated from the LED	

	NF	MF	FF
Min L (mm)	166.8	171.8	187.8
Max L (mm)	178.8	187.8	221.8

Focus Light PWR Version

	Power Version : EFFI-SHARP-PWR-FL
Standard connection (M12 connector) With Driver	
STR connection (M8 connector) Direct current	
Length according to the **objective version**	

	NF	MF	FF
Min L (mm)	188.3	193.3	209.3
Max L (mm)	200.3	209.3	243.3

Thermal considerations Thanks to its design, the heat is efficiently dissipated from the LED