



### PASSIVE Version

Very intense and uniform illuminated area

Full range of colors: from UV to IR, white

Long lifetime and few maintenances

Compatible with most objectives (C-Mount)

Flexible: Adjustable working distance & spot size

		PSV (Passive cooling)
<b>Electronics</b>	Connectors	M12, 5 Contacts (with LED driver)
	Power supply	24V DC
	Illumination mode	Continuous or strobe mode
	Power consumption	45 W to 90W (depending on the LED version)
<b>Optics</b>	Wavelength	Various wavelengths (from UV to IR, white)
	Projection system	Near Field, Middle Field, Far Field & any C-mount objective
	Projected pattern	Square, Disc or Half-moon patterns
<b>Mechanics</b>	Weight	620 g
	Width x length	79,1 mm x 171.9 mm (NF & MF) or 212,4 mm (FF)
	Focusing adjustment	An adjustment ring on the objective
	Fastener	8 x M5 holes on the sides of the device
	Material	Device body: Aluminum alloy
<b>Environment</b>	Working temperature	0°C to 40°C
	IP code	IP54 (PSV)

## Part Number



### Reference:

Passive: EFFI-SHARP-**PSV** -**VVV**-**XX**-**YYY**-**Z**

**VVV**: LED version

**MX1**



**MX2** \*(strobe mode only)



**XX**: Objective

**NF**

Typical working distance:  
80 to 3000 mm

Illuminance\*:  
2 000 000 lux at 100 mm

**MF**

Typical working distance:  
420 to 3000 mm

Illuminance\*:  
90 000 lux at 500 mm

**FF**

Typical working distance:  
350 to 3000 mm

Illuminance\*:  
20 000 lux at 1000 mm

**CM**

To adjust a C-mount  
objective

**YYY**: Wavelength (nm) / Color (other wavelengths available on demand)

• UV 385 – 395 – 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-PSV-**VVV**-**XX**-**YYY**-**Z**-**POL**

\*: Measurements were made with a 2000mA strobe current through each LED (white MX2 LED version).

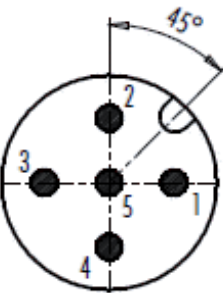
## Electronical considerations



### Contact arrangement

The EFFI-SHARP is supplied with a 24V constant voltage.

Cable length = 500 mm.

CONVENTION CABLE M12					
Pin number	Cable color	Contact arrangement	Designation	Details	Max Power Consumption (with MX2 LED version)
1	Brown	 <p>M12 male connector</p>	+24V	+24V	1,8A@24V (strobe) 1,1A@24V (continuous)
2	White		NPN	NPN [triggered on falling edge] - Max 24V (Light ON if $V_{NPN} < 1.5\text{ V}$ / OFF if $V_{NPN} > 3\text{ V}$ )	12mA@3,5V 3mA@5V 0,5mA@10V 0,15mA@24V
3	Blue		GND	GND	/
4	Black		PNP	PNP [triggered on rising edge] - <b>Max 24V</b> (Light ON if $V_{PNP} > 4.5\text{ V}$ / OFF if $V_{PNP} < 3\text{ V}$ )	12mA@24V 3mA@10V 0,5mA@5V 0,15mA@3,5V
5	Grey		AIC*	AIC (Analog Intensity control) * - Max 24V	0,1mA@0V 0,3mA@5V 1mA@10V 3mA@24V

\*If the AIC is not connected, the light will light on at 100% as if  $V_{AIC}=24\text{V}$ . If you don't need to adjust light level do not connect/use this PIN.

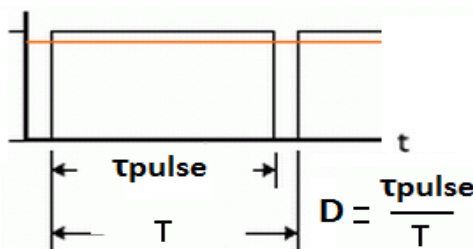
### Strobe mode

The LED driver inside the product is set to automatically pulse the LED.

If you trigger light for a short pulse ( $< 100\text{ }\mu\text{s}$ ), light is pulsed (LED are driven at 2A).

If your pulse is longer, light automatically decreases LED current to protect LED against failure.

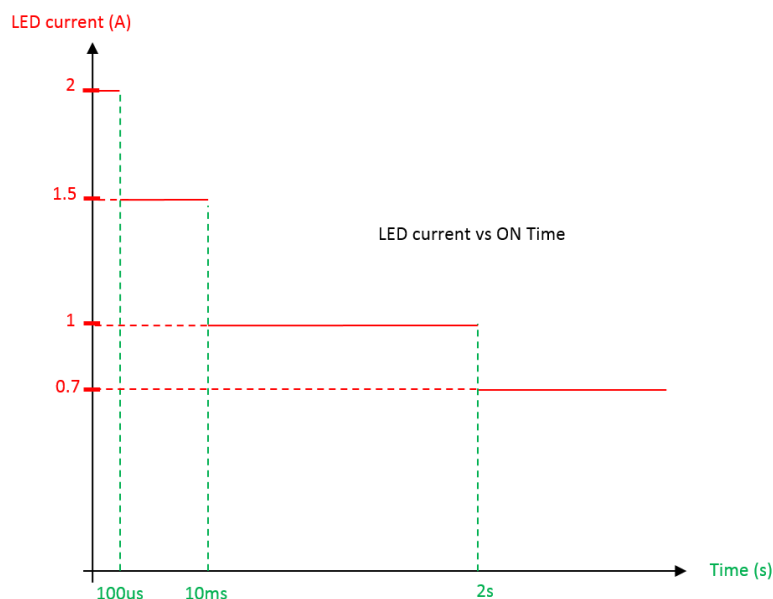
To protect LED, the product will enter in protection mode (Light is OFF for 2 second) if the duty cycle is superior to 0.3. Every 2 seconds, the product will check if duty cycle is correct to restart.



If  $D = \text{Duty cycle} (\text{ON TIME} / (\text{ON TIME} + \text{OFF TIME})) > 0.3 \rightarrow \text{Light shutdowns for 2 seconds}$

### Continuous mode

If you set trigger NPN continuously ON (or PNP), the light will run continuously with a 700 mA LED current.

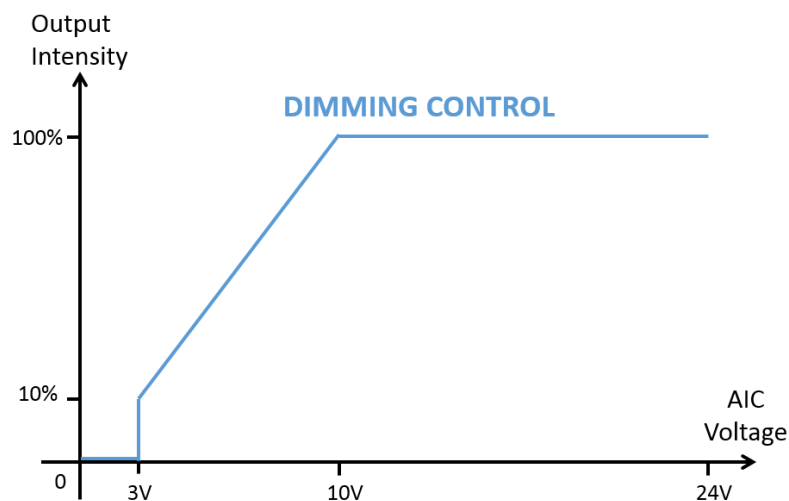


Power consumption of the EFFI-Sharp V2 PSV		
LED version	Power consumption – Continuous (0,7A)	Power consumption – Max (2A)
MX1	15 W	45 W
MX2	No continuous	90 W

### Analog Intensity Control (AIC)

By adjusting the analog tension, light intensity can be controlled from 10% to 100%.

If the Input AIC is not connected, the EFFI-SHARP will act as if AIC was set at 24V.



- 0 – 3V: LED OFF
- 3 – 10V: ≈10% to 100% light intensity
- 10 - 24V: LED ON 100%
- 100% if not connected

### Temperature protection



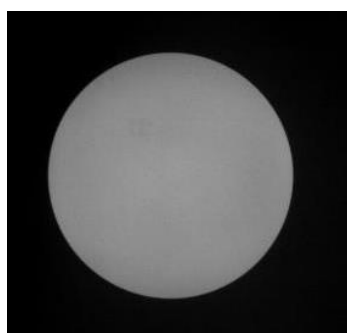
The EFFI-SHARP-PSV is protected against over warming.

If LED temperature exceeds 80°, the light is automatically switched off. The EFFI-SHARP will restart itself as soon as temperature is below 70°C.

## Optical considerations

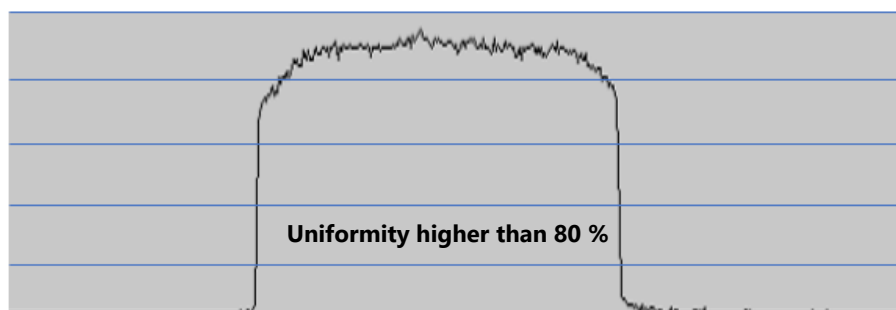


### Uniformity of the pattern



1  
0,8  
0,6  
0,4  
0,2  
0

### Transversal profile

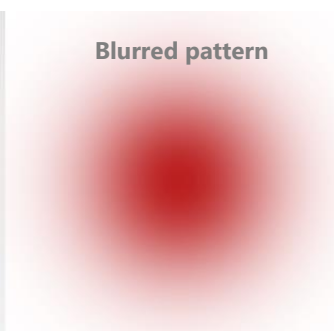


### Adjust optical configuration

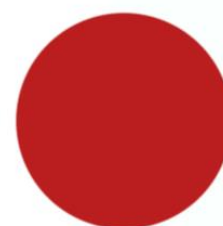
Rotate the adjustment ring to get a sharp edges pattern and lock the position by screwing the M4 screw.



Blurred pattern

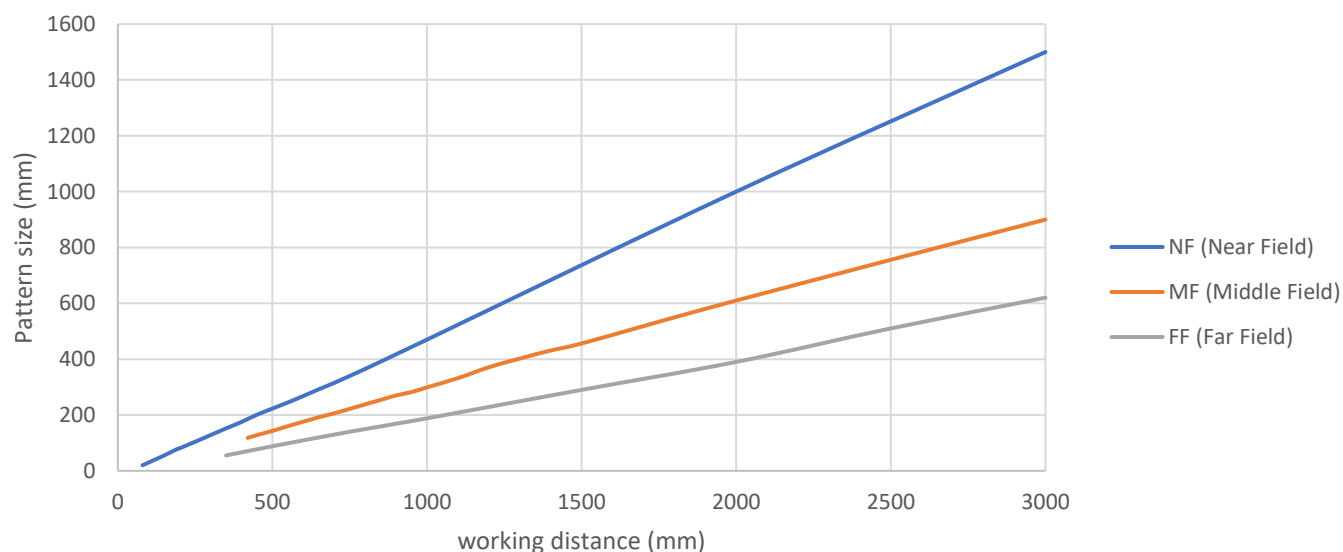


Sharp pattern



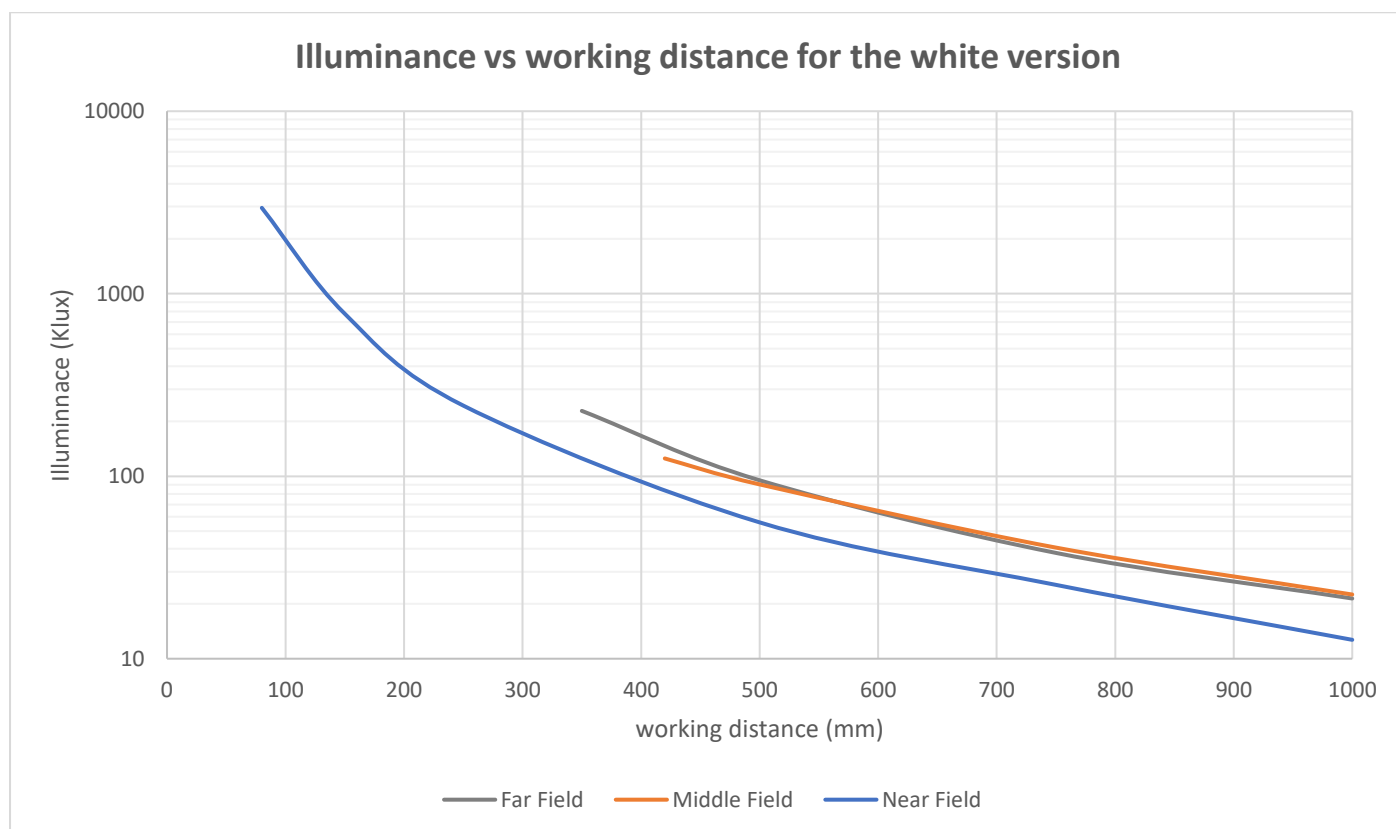
### Pattern size VS working distance

#### Pattern size VS working distance



Measurements were made with the disc Ø15,1 mm mask (Z=2).

## Illuminance VS working distance



Measurements were made with a 2000mA strobe current through each LED (MX2). Please refer to the Power factor array for more information.

## Power factor

Objective	Near Field	Middle Field	Far Field
Power factor between MX2 and MX1 LED version	1,7	1,3	1,1

$$Illuminance_{MX1} = \frac{Illuminance_{MX2}}{Power\ Factor}$$

Intensity through each LED	1,5 A	1 A	0,7 A
Power factor between a 2A strobe and another intensity	1,2	1,7	2,5

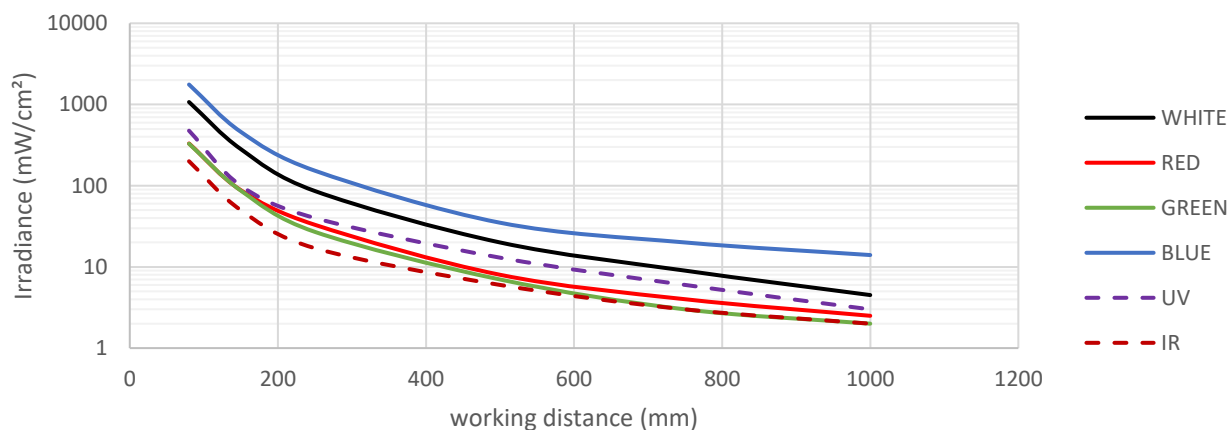
$$Illuminance_{other\ intensity} = \frac{Illuminance_{2A}}{Power\ Factor}$$

Irradiance VS working distance

EFFI-SHARP-PSV

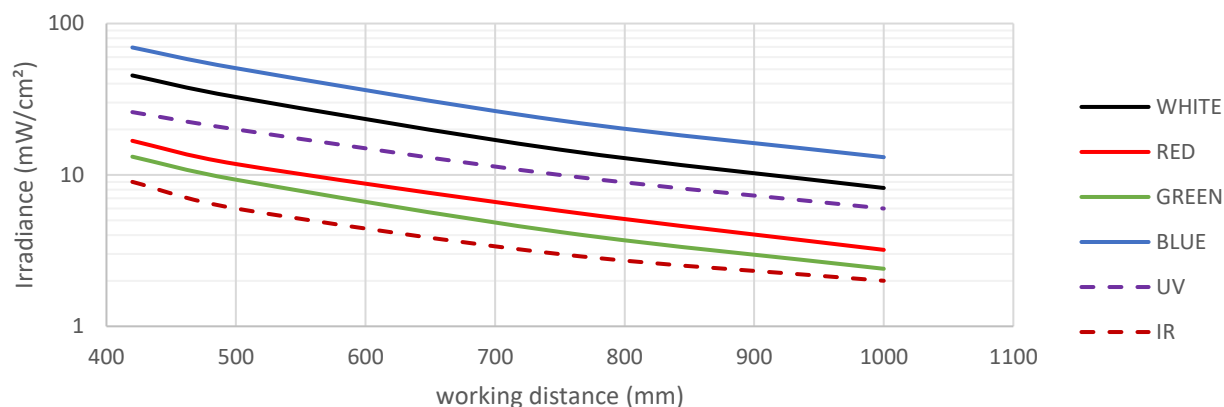
Near Field

Irradiance VS working distance - Near Field



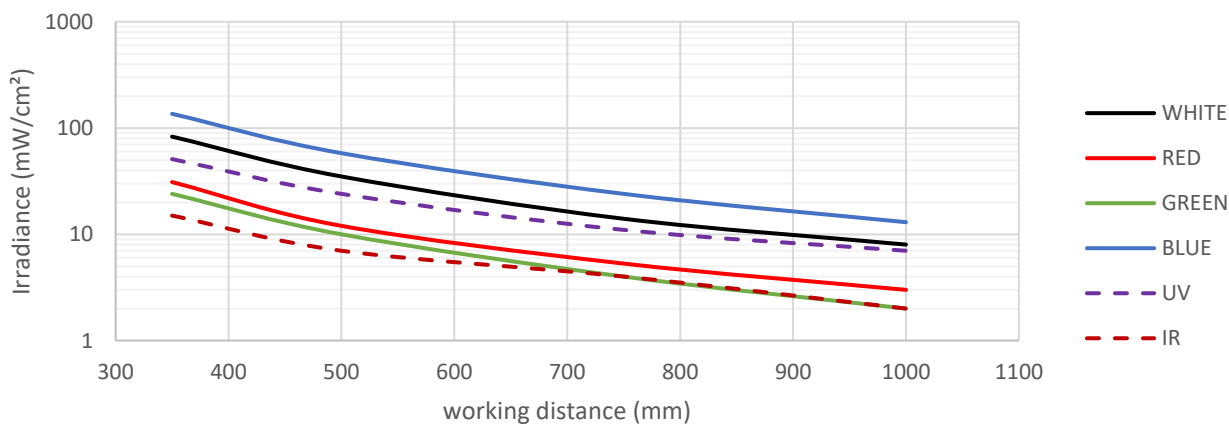
Middle Field

Irradiance VS working distance - Middle Field



Far Field

Irradiance VS working distance - Far Field



Measurements were made with a 2000mA strobe current through each LED (MX2). Please refer to the Power factor array for more information.

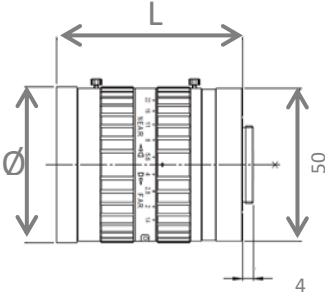
C-mount objective selection



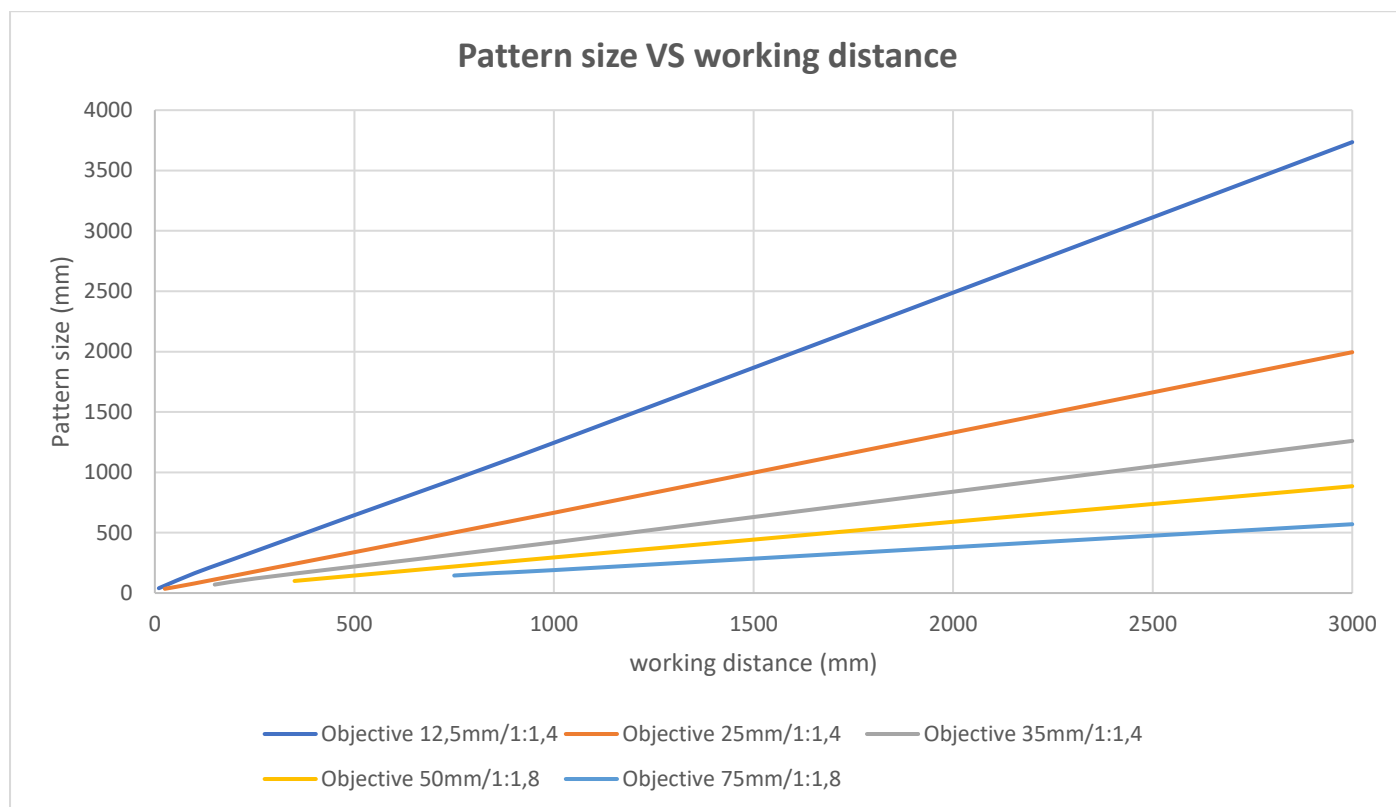
Any C-mount objective can be mounted on the EFFI-SHARP-CPT. The objective is not provided with the EFFI-SHARP-CPT.

To guarantee the quality of the projector, the pattern is directly mounted in the projector body. However, the pattern can be observed through the aperture of the projector. Avoid any sharp contact with the mask: this one is sensitive and can easily be damaged.

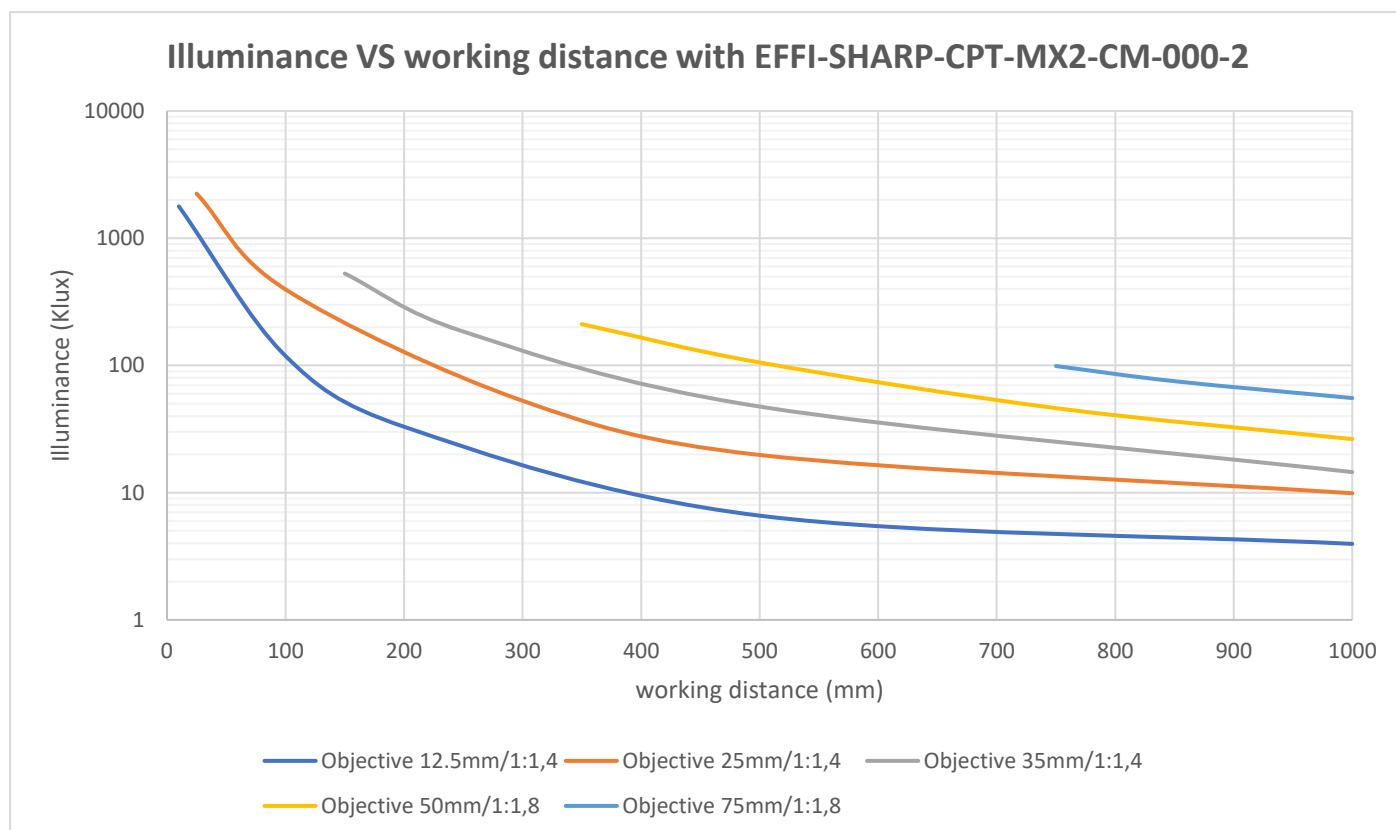
EFFILUX recommends using one of the following objectives with the EFFI-SHARP-V2 (2/3" 1.5MP and 1" 1.5MP):

	OBJ-1-F12.5 CF12.5HA-1	OBJ-1-F25 CF25HA-1	OBJ-1-F35 CF35HA-1	OBJ-1-F50 CF50HA-1	OBJ-1-F75 CF75HA-1
Focal length (mm)	12.5	25	35	50	75
Iris Range	F1.4 – F22			F1.8 – F22	
Angle of View (HxV)	45° 13' x 42° 01'	28° 43' x 21° 44'	20° 43' x 15° 37'	14° 35' 10° 58'	9° 45' x 7° 19'
Filter thread	M49 x 0.75 mm				
L x Ø	68.5 x 51 mm	75.5 x 51 mm	48.5 x 51 mm	55.5 x 51 mm	76 x 51 mm
Mechanical characteristics					

## Evolution of the pattern size for different C-mount objective




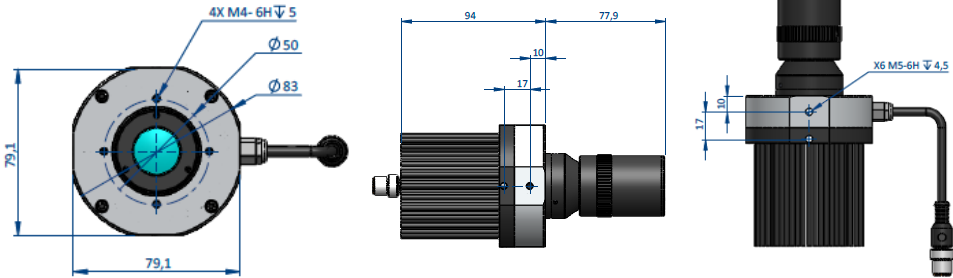

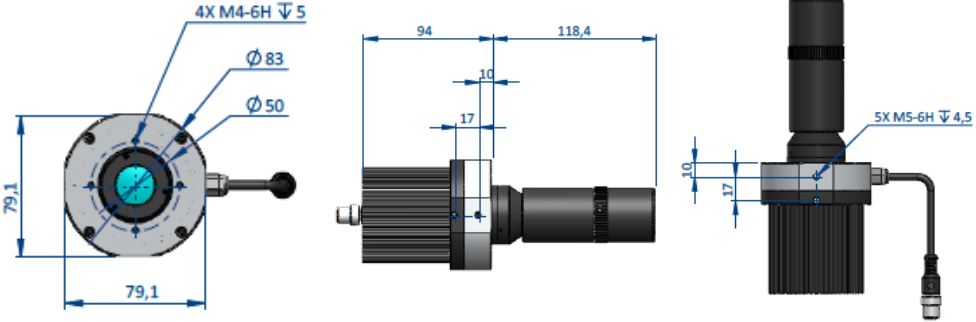

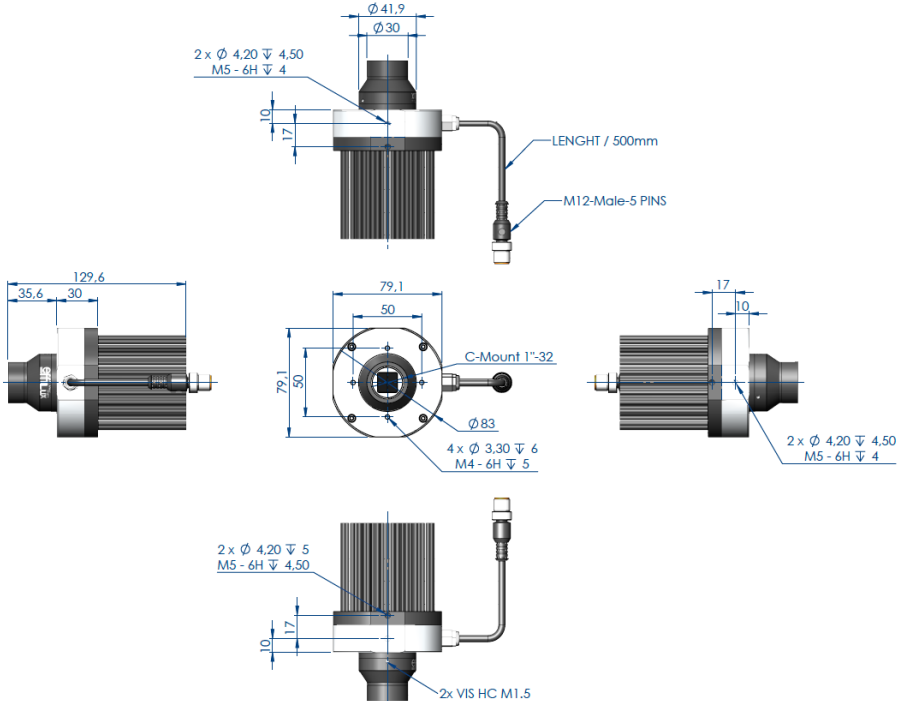
## Evolution of the illuminance for different C-mount objective



## Mechanical considerations (Dimensions in mm)



### PSV Version

Objective version	Dimensions & fixations [in mm]
<b>Near Field (NF) &amp; Middle Field (MF)</b> 	
<b>Far Field (FF)</b> 	
<b>C-mount (CM)</b> 	

M12 cable length = 500 mm.

### Change the mask



Before trying to change the mask, please **disconnect** the product. Then, you can follow the steps below. It is recommended to use **gloves**. If you have the C-mount version, please take off the C-mount adaptor before following the steps below.

EFFM-SPANNER-WRENCH



The two items are needed for the following steps.

1 Ready

Objective

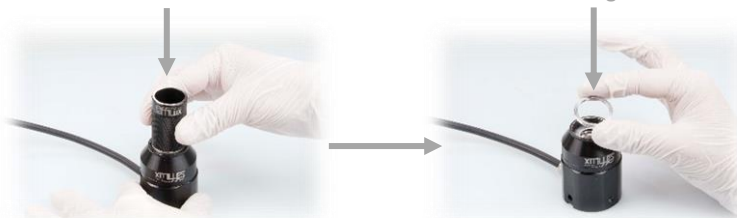


2 Unscrew the objective

Mask (Disc) Clamp

EFFM-SPANNER-WRENCH

Ring



3 Unscrew the ring

4 Remove the mask carefully

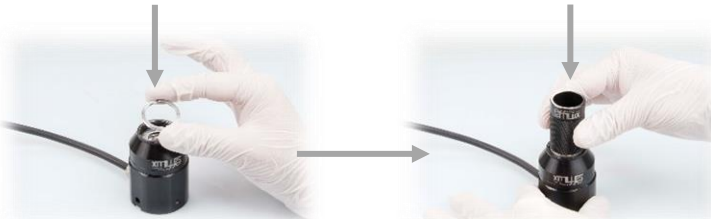
Mask (Square)



5 Place the new mask

Ring

EFFM-SPANNER-WRENCH



6 Screw the ring



7 Screw the objective



8 Ready

The EFFI-SHARP is ready to be used with the new mask.

Remember that the "Change the mask" part works with all the EFFI-SHARP Version (PSV & CPT) even if the pictures are with a CPT.

**N.B:** If you did not succeed in following the steps, please feel free to contact us.