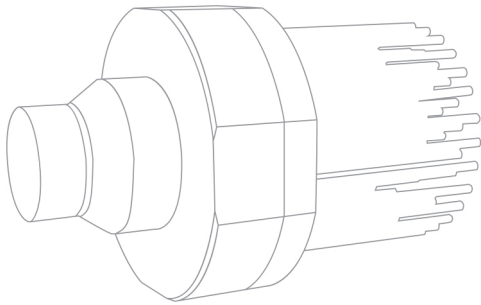


3D PROJECTOR

ELL SERIES



The ELL Series is a **structured light source**, which is ideal for 3D reconstruction applications or Stereo Vision applications.

This series offers great accuracy by using C-mount lens projection and offering three different masks: **Line**, **Grid**, or **Cloud of Dots**.

Since the ELL Series is a LED-based lighting solution, it is available in different colors and users do not need to worry about the speckle problems, eye safety and life time issues. This makes the ELL Series the ideal substitute for lasers.

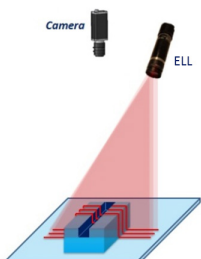
MAIN FEATURES

- Very intense and uniform illuminated area
- Long lifetime and few maintenance
- Compatible with most objectives (C-Mount)
- High depth of field for line version
- No speckle

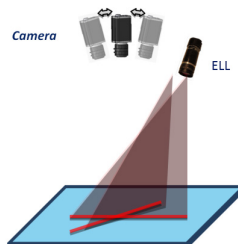


	PV (passive cooling) version	CP (compact) version
Connector	M12 - 5 contacts	M8 - 8 contacts
Power supply	24V DC	Direct current (No driver = No protection)
Illumination mode	Strobe or continuous mode	Strobe mode only
Available wavelength	White, Blue, Green, Red, IR	
Projected pattern	Line, Cloud of dots or Grid	
Width x height	79.1mm x 150.6mm (without the objectives)	42mm x 71mm (without the objectives)
Fastener	8 x M5 holes on the sides of the device	8 x M5 holes on the sides of the device
Material	Device body: Aluminum alloy	Device body: Aluminum alloy
Working temperature	0° to 40° C	0° to 40° C
IP code	IP54	IP54

APPLICATIONS



Stereovision and 3D profiling



Alignment applications

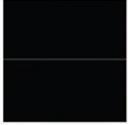
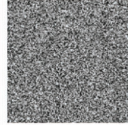
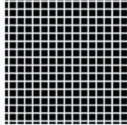


ELL (up) VS LASER (down):
no speckle = more accurate

OPTICAL CONSIDERATIONS

Masks

The ELL is available with different type of masks.

LINE (-LN)	CLOUD OF DOTS (-CD)	GRID (-GD)
1 line: 10µm line length : 13mm 	Cloud of dots density 50% Surface 12.8x9.6 mm ² 	Grid 40x40 lines 50µm Surface 10x10 mm ² 

Pattern dimension

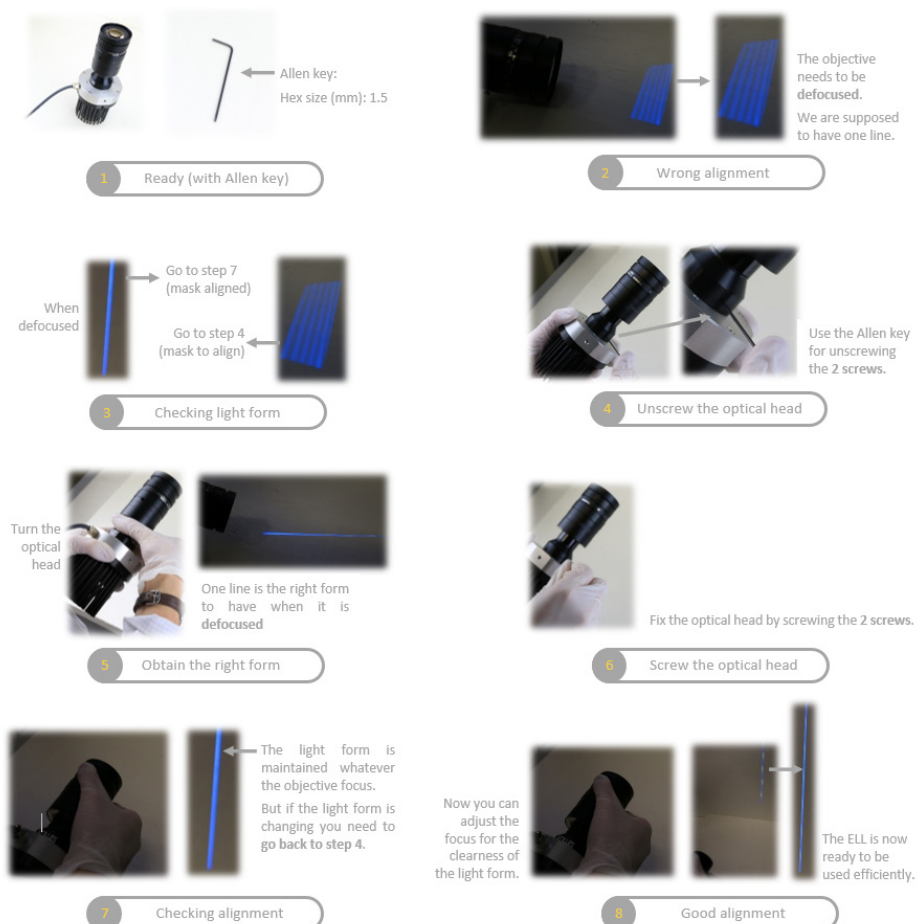
Depending on the working distance (WD) and the C-mount objective selected, different pattern sizes are obtained:

Objective	Line width Mask dimensions : 13mm x 10µm (-LN)			
	WD = 30 cm	WD = 50 cm	WD = 80 cm	WD = 100 cm
f = 12.5 mm	0.25 mm	0.40 mm	0.64 mm	0.80 mm
f = 16 mm	0.20 mm	0.32 mm	0.48 mm	0.60 mm
f = 35 mm	0.08 mm	0.14 mm	0.23 mm	0.28 mm
f = 50 mm	0.06 mm	0.10 mm	0.16 mm	0.20 mm
f = 75 mm	n.a.	n.a.	0.10 mm	0.13 mm

Objective	Pattern dimensions HxW Mask dimensions : 12.8mm x 9.6mm (-CD)			
	WD = 30 cm	WD = 50 cm	WD = 80 cm	WD = 100 cm
f = 12.5 mm	32cm x 23cm	51cm x 37cm	82cm x 59cm	102cm x 73cm
f = 16 mm	25cm x 19cm	41cm x 31cm	66cm x 49cm	82cm x 61cm
f = 35 mm	11cm x 8cm	18cm x 14cm	29cm x 22cm	36cm x 27cm
f = 50 mm	n.a.	12cm x 9cm	20cm x 15cm	25cm x 19cm
f = 75 mm	n.a.	n.a.	13cm x 10cm	16cm x 12cm

Alignment for line version

When using the line mask with the ELL Series, please make align the mask with the LED to optimize the depth of field.



1 Ready (with Allen key)

Allen key:
Hex size (mm): 1.5

2 Wrong alignment

The objective needs to be defocused.
We are supposed to have one line.

3 Checking light form

When defocused → Go to step 7 (mask aligned)
Go to step 4 (mask to align)

4 Unscrew the optical head

Use the Allen key for unscrewing the 2 screws.

5 Obtain the right form

Turn the optical head
One line is the right form to have when it is defocused

6 Screw the optical head

Fix the optical head by screwing the 2 screws.

7 Checking alignment

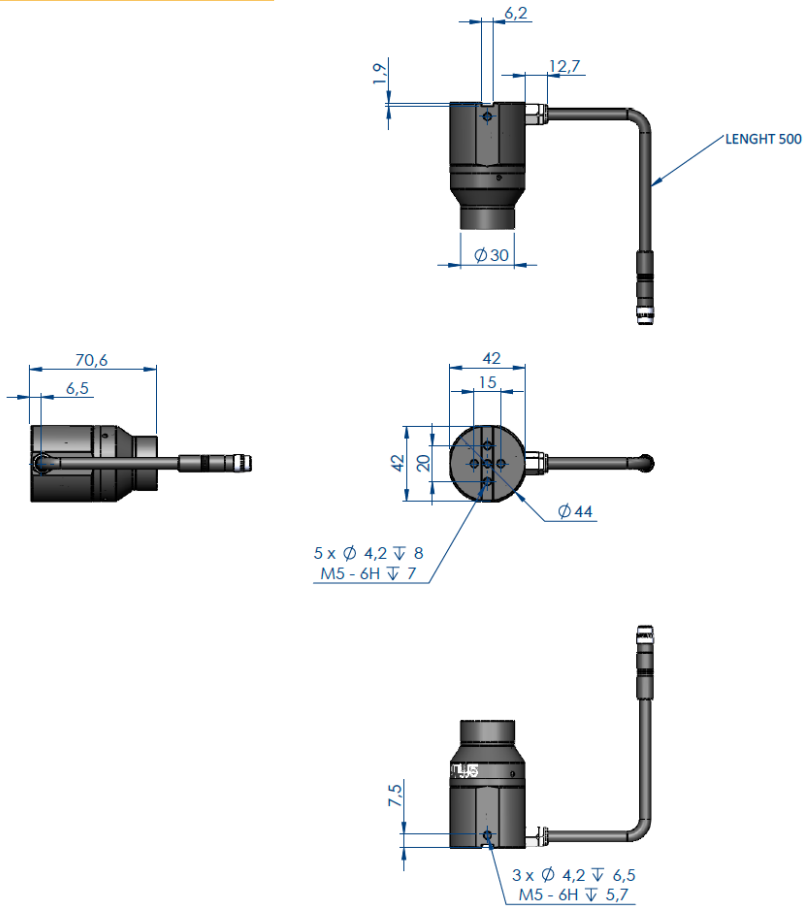
The light form is maintained whatever the objective focus.
But if the light form is changing you need to go back to step 4.

8 Good alignment

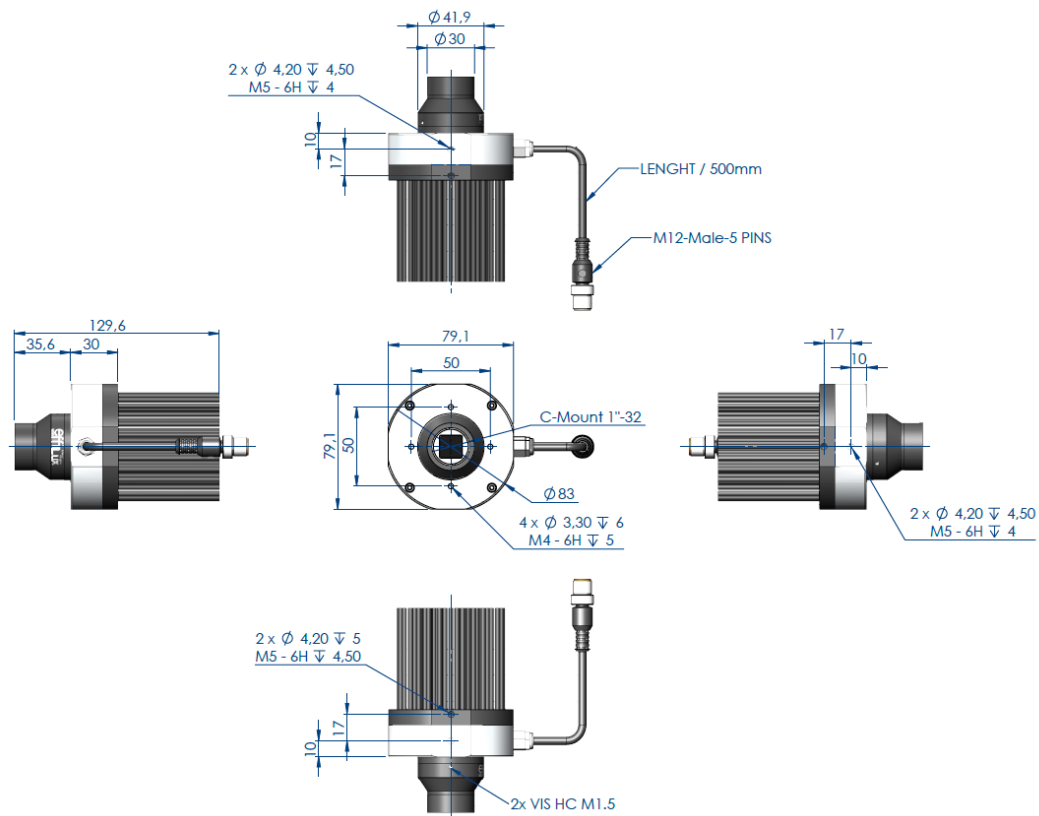
Now you can adjust the focus for the clearness of the light form.
The ELL is now ready to be used efficiently.

DIMENSIONS (MM)

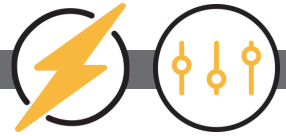
ELL-CP : Compact version



ELL-PV : Passive cooling version




ELECTRONICAL CONSIDERATIONS - PV AND FN VERSIONS



Contact arrangement

When using the ELL Series, please use a 24VDC.

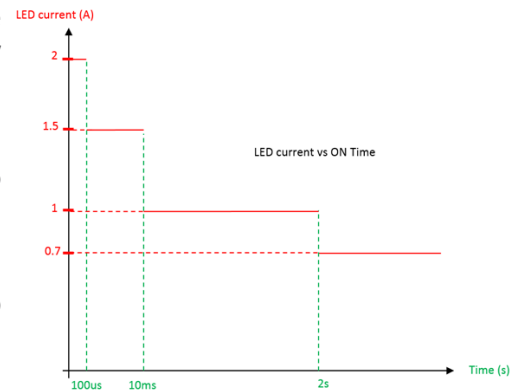
Contact arrangement	Number	Color Contact	Designation
 <p>MALE</p> <p>M12 male connector</p>	1	Brown	+24V
	2	White	NPN TRIGGER (trigger on falling edge) for Auto-strobe Light ON if $V_{NPN} < 1.5V$ DC max 24V - Analog Voltage
	3	Blue	GND
	4	Black	PNP TRIGGER [trigger for rising edge] for Auto-strobe Light ON if $V_{PNP} > 3V$ DC max 24V - Analog Voltage
	5	Grey	AIC: Analog Intensity Control for Dimming Control <i>(If AIC is not connected, the light will light on at 100% as if VAIC = 24V. If you do not need to adjust light level, do not connect/use this PIN) - max 24V - Analog Voltage</i>

Autostrobe feature and continuous mode

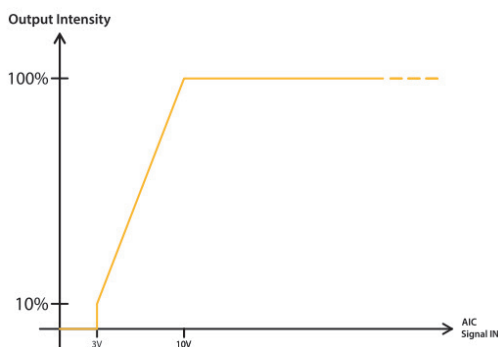
The autostrobe integrated controller in the ELL Series is set to automatically strobe the LED. When the ELL Series is trigger shorter than 100µs, the LED is automatically overdriven at 2A. When the trigger is longer than 100µs, the ELL Series will automatically decrease the current to protect the LED.

If a duty cycle is larger than 0.3, the ELL Series will enter a protection mode to protect the LED and will stay off for 2 seconds. The ELL Series will check every 2 seconds if this duty cycle is maintained.

When using the ELL Series in continuous mode (set trigger continuously), the LED will be driven at 700mA.



Dimming control

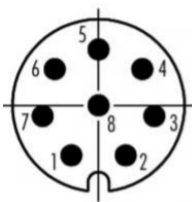


By adjusting the analog tension, light intensity can be controlled from 10% to 100%.
If the Input AIC is not connected, the EFFI-LASE will act as if AIC was set at 24V.

ELECTRONICAL CONSIDERATIONS - CP VERSION

Contact arrangement

The ELSB-CP is supplied with a direct current through the M8-8 contacts (male).

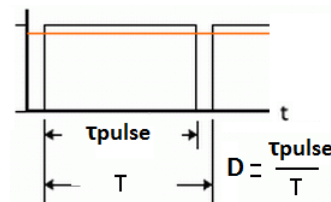
Contact arrangement	Number	Color Contact	Designation
 <p>M8 8 contacts male connector</p>	1	White	-V _{LED}
	2	Brown	+V _{LED}
	3	Green	n.a.
	4	Yellow	n.a.
	5	Grey	n.a.
	6	Pink	n.a.
	7	Blue	-TH (Thermistor)
	8	Red	+TH (Thermistor)

Direct current mode

You can see below 5 possible configurations depending on the current that you provide to the ELL-CP.

Contact EFFILUX for more information.

Configuration	Current	Max pulse duration (μs) / τ _{pulse}	D
1	1.2A	50 000	0.5
2	1.5A	10 000	0.1
3	2A	1 000	0.01
4	2.5A	100	0.001
5	3.5A	40	0.0004



PRODUCT LINE UP

Power consumption is given for white products.

ELL-CP : Compact version

Series	Part Number	Color	Wavelength / Color temperature	Connector	Weight	Pattern
ELL	ELL-CP-30SW-LN	White	5500 K ± 500 K	M8	200g	Line
ELL	ELL-CP-30BL-LN	Blue	465nm			
ELL	ELL-CP-30GR-LN	Green	525nm			
ELL	ELL-CP-30RD-LN	Red	625nm			
ELL	ELL-CP-30IR-LN	Infrared	850nm			
ELL	ELL-CP-30SW-CD	White	5500 K ± 500 K	M8	200g	Cloud of dots
ELL	ELL-CP-30BL-CD	Blue	465nm			
ELL	ELL-CP-30GR-CD	Green	525nm			
ELL	ELL-CP-30RD-CD	Red	625nm			
ELL	ELL-CP-30IR-CD	Infrared	850nm			
ELL	ELL-CP-30SW-GD	White	5500 K ± 500 K	M8	200g	Grid
ELL	ELL-CP-30BL-GD	Blue	465nm			
ELL	ELL-CP-30GR-GD	Green	525nm			
ELL	ELL-CP-30RD-GD	Red	625nm			
ELL	ELL-CP-30IR-GD	Infrared	850nm			

ELL-PV : Passive cooling version

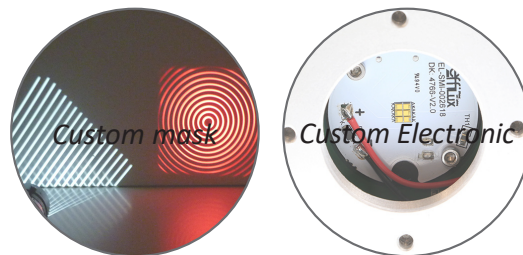
Series	Part Number	Color	Wavelength / Color temperature	Power Consumption		Connector	Weight	Pattern
				Strobe	Continuous			
ELL	ELL-PV-30SW-LN	White	5500 K ± 500 K	45W	15W	M12	400g	Line
ELL	ELL-PV-30BL-LN	Blue	465nm					
ELL	ELL-PV-30GR-LN	Green	525nm					
ELL	ELL-PV-30RD-LN	Red	625nm					
ELL	ELL-PV-30IR-LN	Infrared	850nm					
ELL	ELL-PV-30SW-CD	White	5500 K ± 500 K	45W	15W	M12	400g	Cloud of dots
ELL	ELL-PV-30BL-CD	Blue	465nm					
ELL	ELL-PV-30GR-CD	Green	525nm					
ELL	ELL-PV-30RD-CD	Red	625nm					
ELL	ELL-PV-30IR-CD	Infrared	850nm					
ELL	ELL-PV-30SW-GD	White	5500 K ± 500 K	45W	15W	M12	400g	Grid
ELL	ELL-PV-30BL-GD	Blue	465nm					
ELL	ELL-PV-30GR-GD	Green	525nm					
ELL	ELL-PV-30RD-GD	Red	625nm					
ELL	ELL-PV-30IR-GD	Infrared	850nm					

For cables cf. the datasheet of the ECB cables series.

For fasteners cf. the datasheet of the BK fasteners series.

CUSTOM - ON REQUEST

EXAMPLE OF CUSTOM



EU DIRECTIVE



In accordance with EU machinery directive, EMC directive, and low voltage directive, machines and electronic devices not marked with the CE logo are subject to distribution restrictions within the EU. All EL Series products. These products will maintain the EU mandate compatibility of our customers' machinery and electronic devices.

RoHS DIRECTIVE

All products from the EL Series comply with the RoHS Directive.

MICRO WEBSITE

www.el-series.com



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