


 Strobe version  
 available

Very intense and uniform illuminated area  
 Full range of colors: from UV to IR, white, multi and hyperspectral

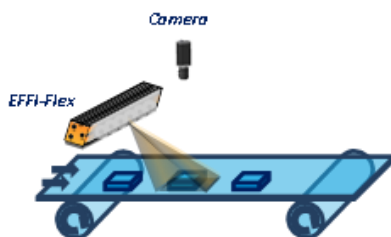
Long lifetime and minimal maintenance

Standard connections and fasteners

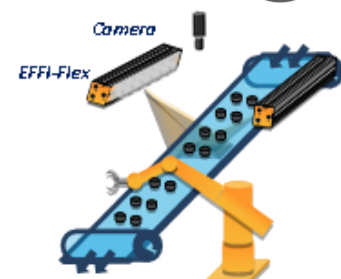
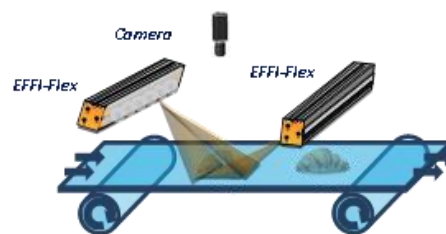
Flexibility: 4 adjustable illumination angles & 3 different projection windows

<b>Electronics</b>	Connectors	M12 – 4 Pins or M12 Power – 4 Pins depending on the power consumption
	Power supply	24V DC
	Illumination mode	Continuous or strobe mode
	Power consumption	Depends on the amount of LEDs (page 6)
	Electronic mode	Auto-Strobe or continuous
<b>Optics</b>	Wavelength	Single (from UV to IR) wavelength / White / Multispectral / Hyperspectral
<b>Mechanics</b>	Weight	60g + 60g per LED
	Width x height x length	51mm x 49mm x length depends on the amount of LEDs
	Fastener	One T-slot on the back for 8mm T-nut (M6 recommended), and one slot on the side for M6 hex nut
	Material	Device body: Aluminum alloy & ABS; Window: PMMA
<b>Environment</b>	Working temperature	0°C to 50°C
	IP code	IP50 (option IP67 → Refer to EFFI-FLEX-CPT and IP69K → Refer to EFFI-FLEX-IP69K)

## Applications



Quality control



Pick and place

## Part Number



## Reference:

EFFI-FLEX-XXX-ZZZ-WW-PP

## XXX: Number of LED

XXX	1	3	5	10	15	...
Standard version	55 mm	95 mm	135 mm	235 mm	335 mm	More than 4 m
1 LED / 2 positions version*	-	-	235 mm	435 mm	635 mm	More than 4 m

\* If 1 LED / 2 version, add -L2 (Length X 2) before the number of LED

 ZZZ: Color / Wavelength ( $\pm 10\text{nm}$ )

●●● RGB RGB* * Option	● UV 365* *TR-P0 mandatory	● UV 405	● Blue 465	● Green 525	● Red 625	● IR 850	○ White 000 (T°=5500K $\pm$ 500K)	○ Hyperspectral (HSI)* * Option (Cf. page 4)
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## WW: Windows (if not specified, default semi-diffusive window)

TR : Transparent

SD : Semi-diffusive

OP : Opaline



+ Powerful ←

→ + Homogeneous

## ZZ: Position (if not specified, default position P2) / Emission angle according to the lens position

P0 (whitout lens)

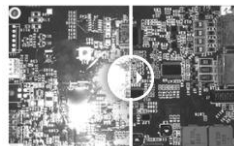
P1

P2

P3



## Option Polarizer (to eliminate glare caused by the lighting)



Without polarizer VS With polarizer

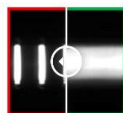
 If polarizer, add -POL in the reference. Possibility to buy only the accessory. **Part number:** EFFI-FLEX-XXX-ZZZ-WW-PP-POL

The standard polarizer is not suitable for continuous mode in blue or white light. For this applications, the high durability polarizer is necessary.

**Part number:** EFFI-FLEX-XXX-ZZZ-WW-PP-POL-HDY

## Option Linescan (linear lighting or a darkfield lighting)

## Option Cylindrical lens (linear lighting)



Without linescan VS With linescan

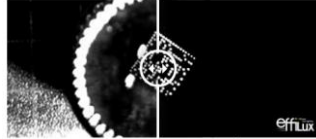
If linescan, add -LS in the reference. Possibility to buy only the accessory.

**Part number:** EFFI-FLEX-WW-XXX-YY-ZZ-LS


If Effi-Flex with cylindrical lens, add -CYL in the reference. Classic configuration with linescan accessory and lens in position P1.

**Part number:** EFFI-FLEX-WW-XXX-TR-P1-LS-CYL

## Option Pure UV (for fluorescence applications)



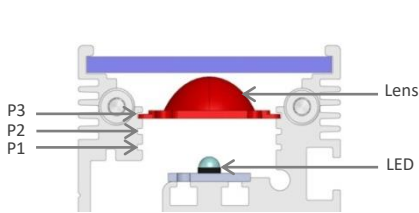
Without PUV VS With PUV

The PureUV is an innovative EFFILUX technology which allows you to eliminate unwanted reflections in fluorescence applications. If PureUV, add - **PUV** in the reference. Only for 365nm EFFI-Flex. **Part number:** EFFI-FLEX-WW-365-YY-ZZ-PUV

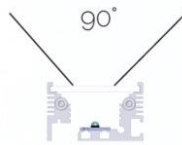
### Optical considerations



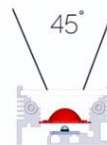
#### How to change the lens positions of the EFFI-FLEX



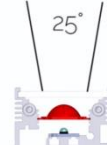
P0 (Without lens)



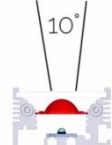
P1



P2



P3



1 Unscrew the M4 screws



2 Slide out the window



3 Slide out all lenses



4 Replace the window and lenses in desired configuration

#### How to handle & to clean optical components?

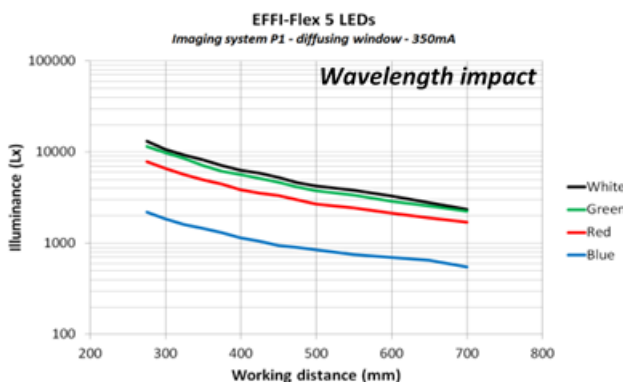
To handle the optical components, wearing gloves is strongly recommended.

To clean the optical components:

> Use compressed air duster if there is dust.

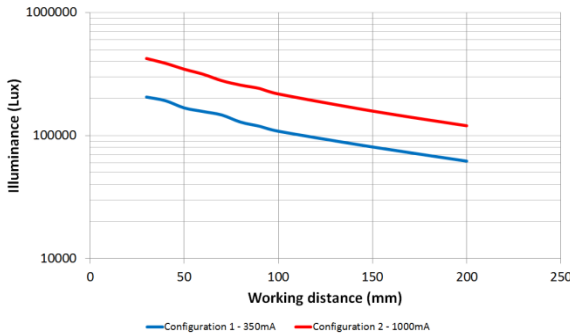
> To remove marks on the lens or the window, just a drop or two wiped of non-alcohol-based lens cleaning fluid in a gentle circular motion with a cleaning tissue. Always apply the fluid to a tissue rather than the lens itself.

#### Illuminance vs the working distance

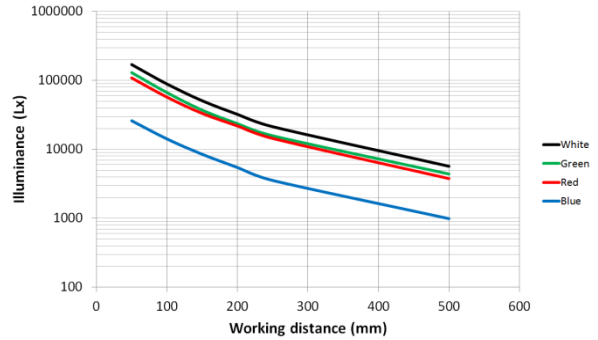


**Linescan configuration**

Illuminance vs working distance  
White 20LEDs EFFI-Flex - linescan configuration

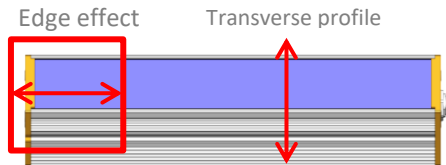


Illuminance vs working distance  
5 LEDs EFFI-Flex - linescan configuration - 350mA

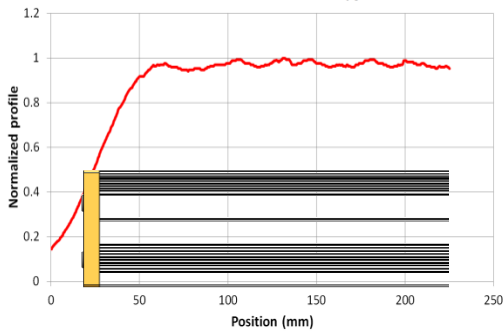


NB: Configuration 2 requires an additional thermal management system

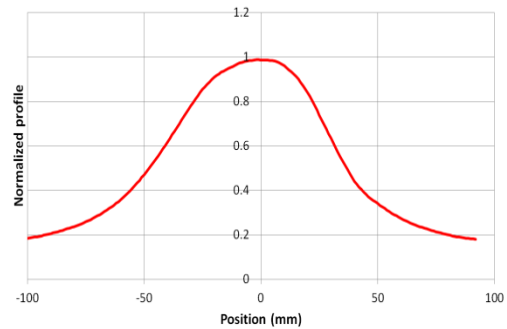
**Profile**



Edge effect - WD=50mm  
White EFFI-Flex 20LEDs - linescan configuration

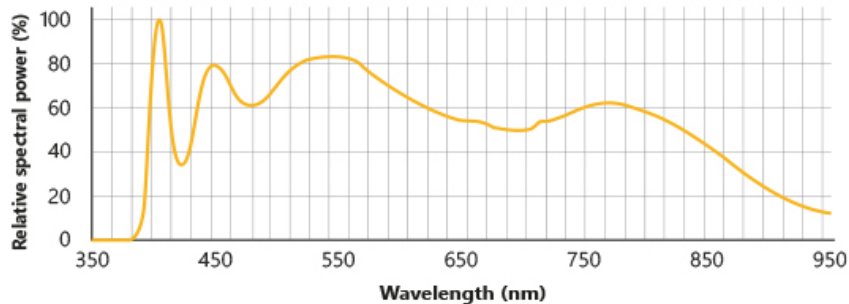


Transverse profile - WD = 50mm  
White EFFI-Flex 20 LEDs - linescan configuration



**Option: Hyperspectral version**

The EFFI-Flex is available in Vis-NIR broadband hyperspectral version with a single, continuous spectrum LED source, that provides a relatively flat spectrum between 400nm and 900nm.



Spectrum of the hyperspectral LED « Visible-NIR »

The EFFI-Flex-HSI is only available with ELS electronics version.  
Please contact Effilux for additional information.

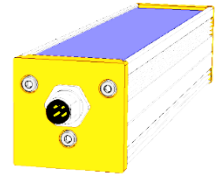
## Electronical considerations



### Contact arrangement

The EFFI-FLEX is supplied with a 24V constant voltage. The TRIG contact needs to be connected.

Contact arrangement <sup>1</sup>	Number	Color	Designation <sup>(1)</sup>
<p>M12 Male    M12 Power Male</p> <p><b>Connector depends on electrical power consumption</b></p>	1	Brown	+24V
	2	White	N/A
	3	Blue	GND
	4	Black	PNP TRIGGER <sup>(2)</sup> (trigger for rising edge) for Auto-strobe Light ON if $V_{PNP} > 4.5V$ DC – Max 24V DC – Analog Voltage



- (1) Contact arrangement is different for RGB Option  
 (2) Or AIC (Analog Intensity Control) if ELS version is chosen

### Analog Intensity Control

#### DEFAULT → Auto-Strobe (TRIG) : Standard electronic

Part number	EFFI-FLEX-WW-XXX-YY-ZZ		
Signal	<p>After 2s at 1000mA, LEDs are supplied with 350mA. Respect a duty cycle lower than 30% in strobe mode</p>	<p>Rise Time : 11,5µs Response Time : 6,5µs</p>	<p>Fall Time : 7µs Response Time : 0,5µs</p>

#### OPTION → ELS version (AIC): EFFI-FLEX-WW-XXX-YY-ZZ-ELS-VVV-24V

Part number	ELS-VVV-24V	ELS-IN-VVV-24V	ELS-IN-VVV-5V
Signal	<p>OFF : 0-5V &amp; ON : 5V-24V</p>	<p>ON : 0-22V &amp; OFF : 22V-24V</p>	<p>ON : 0-4.5V &amp; OFF : 4.5V-15V</p>

#### Cooling system for ELS version (contact EFFILUX for more information)

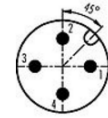
##### Part number: EFFI-FLEX-WW-XXX-YY-ZZ-ELS-VVV-24V

VVV	Output current (mA)[0-100%]	EFFI-Flex	EFFI-Flex 1 LED/2
350	0-350 mA	<p>Passive cooling</p>	<p>Passive cooling</p>
500	0-500 mA	<p>Passive cooling + fan<sup>3</sup> (if duty cycle &gt; 75%)</p>	
700	0-700 mA	<p>Passive cooling + fan<sup>3</sup> (if duty cycle &gt; 50%)</p>	
1000	0-1000 mA	From a duty cycle > 30%, contact us.	

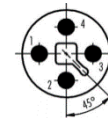
- (3) Fan is not included in the product / Duty Cycle:  $DC = T_{ON} / (T_{ON} + T_{OFF})$

**Power supply**

Amount of LED	Max Electrical power consumption (W)					
	Standard version		ELS 350mA	ELS 500mA	ELS 700mA	ELS 1000mA
	P <sub>Peak_2s</sub>	P <sub>CW</sub> *				
1	5	2	5	5	5	5
3	15	5	5	10	10	15
5	20	8	10	10	15	20
10	40	15	15	20	30	40
15	60	20	20	30	40	60
20	80	30	30	40	55	80
25	95	35	35	50	70	95
30	115	45	40	60	80	115
35	135	50	50	70	95	135
40	155	55	55	80	110	155
45	175	60	60	90	120	175
50	190	65	70	95	135	190
55	210	70	75	105	150	210
60	230	75	80	115	160	230
65	250	85	90	125	175	250
70	270	90	95	135	190	270



M12 Male connector



M12 Power Male connector

\*With standard version: M12 connector can accept more electrical power thanks to its strobe mode

**Signal consumption**

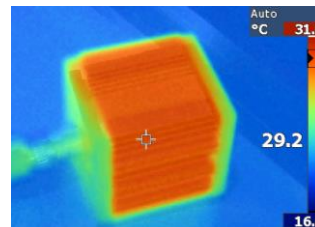
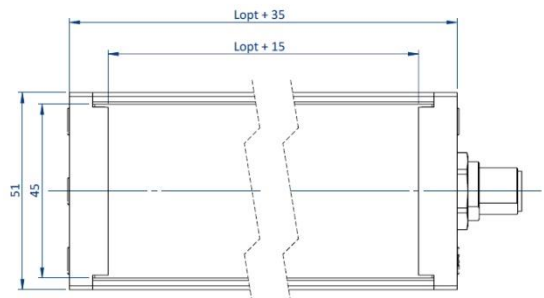
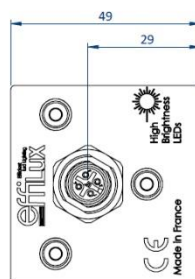
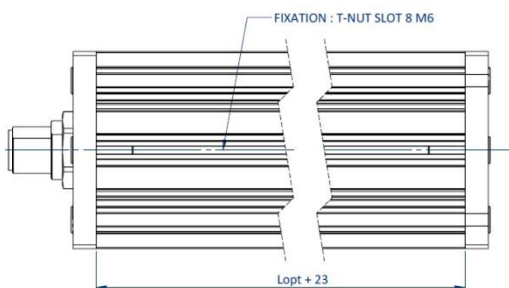
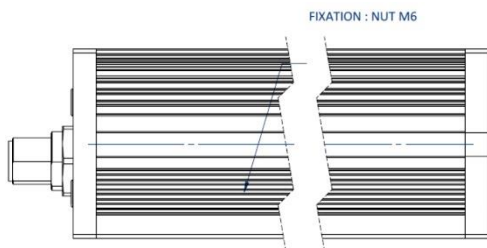
DIM consumption				
ELS version (DIM)	ELS-IN- <b>VVV</b> -24V <b>VVV</b> = 350, 500, 700 or 1000	ELS-IN- <b>VVV</b> -5V <b>VVV</b> = 350, 500, 700 or 1000	ELS- <b>350</b> -24V	ELS- <b>VVV</b> -24V <b>VVV</b> = 500, 700 or 1000
DIM consumption (mA)	4.5mA @24V every 5 LEDs	3mA @24V every 5 LEDs	0.2mA @24V every 10 LEDs	2mA @24V every 5 LEDs

TRIG consumption			
Amount of LED	Consumption @5V (mA)	Consumption @10V (mA)	Consumption @24V (mA)
1	0.05	0.1	1.5
3	0.05	0.1	0.25
5	0.05	0.1	0.25
10	0.1	0.2	0.45
15	0.05	0.1	0.25
20	0.1	0.2	0.45
30	0.1	0.2	0.45
40	0.15	0.3	0.7
50	0.2	0.4	0.9
75	0.25	0.45	1.1
100	0.35	0.65	1.55
125	0.41	0.82	2
150	0.45	0.9	2.2

## Mechanical considerations (Dimensions in mm)



Amount of LEDs	Designation	Mechanical Length L(mm)	Length of the window (mm)	Optical Length L <sub>op</sub> (mm)
		Standard: L = [20x nb_of_LED] + 35 L2: L = [40x nb_of_LED] + 35	Standard: LW = [20x nb_of_LED] + 15 L2: LW = [40x nb_of_LED] + 15	Standard: L <sub>op</sub> = 20 x nb_of_LED L2: L <sub>op</sub> = 40 x nb_of_LED
1	EFFI-FLEX-1-XXX-YY-ZZ	55	35	20
3	EFFI-FLEX-3-XXX-YY-ZZ	95	75	60
5	EFFI-FLEX-5-XXX-YY-ZZ	135	115	100
	EFFI-FLEX-L2-5-XXX-YY-ZZ	235	215	200
10	EFFI-FLEX-10-XXX-YY-ZZ	235	215	200
	EFFI-FLEX-L2-10-XXX-YY-ZZ	435	415	400
15	EFFI-FLEX-15-XXX-YY-ZZ	335	315	300
	EFFI-FLEX-L2-15-XXX-YY-ZZ	635	615	600
20	EFFI-FLEX-20-XXX-YY-ZZ	435	415	400
	EFFI-FLEX-L2-20-XXX-YY-ZZ	835	815	800
25	EFFI-FLEX-25-XXX-YY-ZZ	535	515	500
	EFFI-FLEX-L2-25-XXX-YY-ZZ	1035	1015	1000
30	EFFI-FLEX-30-XXX-YY-ZZ	635	615	600
	EFFI-FLEX-L2-30-XXX-YY-ZZ	1235	1215	1200
50	EFFI-FLEX50-XXX-YY-ZZ	1035	1015	1000
	EFFI-FLEX-L2-50-XXX-YY-ZZ	2035	2015	2000
70	EFFI-FLEX-70-XXX-YY-ZZ	1435	1415	1400
	EFFI-FLEX-L2-70-XXX-YY-ZZ	2835	2815	2800



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