



Strobe version available

Very intense and **uniform** illuminated area

Full range of colors: from UV to IR, white, multi and hyperspectral

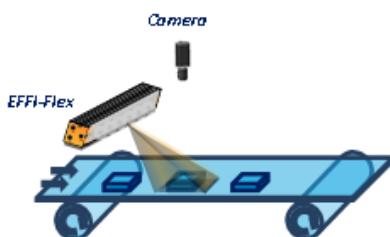
Long lifetime and minimal maintenance

Standard connections and fasteners

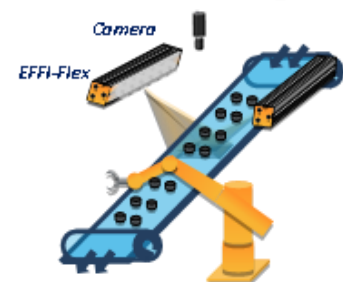
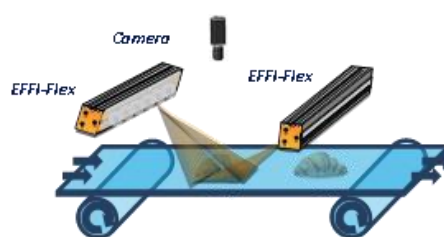
Flexibility: 4 adjustable illumination angles & 3 different projection windows

Electronics	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 number of LEDs (page 6)
	Electronic mode	AutoStrobe or Analog Intensity Control
Optics	Wavelength	Single wavelength (from UV to IR) / White / Multispectral / Hyperspectral
Mechanics	Weight	60g + 60g per LED
	Width x height x length	51mm x 49mm x length depends on the number 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
Environment	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	+5 LED
Optical length	Standard version	20 mm	60 mm	100 mm	200 mm	300 mm	+100 mm
	1 LED / 2 positions version*	-	-	200 mm	400 mm	600 mm	+200 mm

* For the 1 LED / 2 positions type, add -L2 (Length x 2) before the number of LEDs [EFFI-FLEX-L2-XXX...]

ZZZ: Color / Wavelength (nm)

●●● RGB RGB* * Option	● UV 365* *TR-P0 mandatory	● UV 405	● Blue 465	● Green 525	● Red 625	● IR 850	○ White 000 (T°=5500K ±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

PP: Lens position – Emitting angle (if not specified, default position P2 = 25°)

P0 (whitout lens)



P1



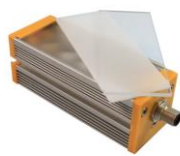
P2



P3



Option KIT (with all diffusers)



If KIT version, replace WW-PP by **-KIT** in the reference.
The light will be delivered as a package including TR, SD and OP windows, and assembled in the default configuration with the lens plate positioned at P2 and the SD diffuser. Only available for sizes ≤ 40LED.
Part number: EFFI-FLEX-**XXX**-**ZZZ**-**KIT**

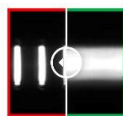
Option Polarizer (to eliminate glare)



Without polarizer VS With polarizer

If polarizer, add **-POL** in the reference. Possibility to buy the accessory separately.
Part number: EFFI-FLEX-**XXX**-**ZZZ**-**WW**-**PP**-**POL**
The standard polarizer is not suitable for continuous mode use of blue or white light. For this type of application, the high durability polarizer is necessary.
Part number: EFFI-FLEX-**XXX**-**ZZZ**-**WW**-**PP**-**POL**-**HDY**

Option Linescan (linear or darkfield lighting)



Without linescan VS With linescan

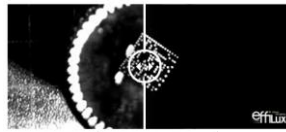
If linescan filter, add **-LS** in the reference. Possibility to buy the accessory separately. Classic configuration with TR window and lens in position P3.
Part number: EFFI-FLEX-**WW**-**XXX**-**TR**-**P3**-**LS**

Option Cylindrical lens (linear lighting)



If 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 PureUV (for fluorescence applications)



Without PUV VS With PUV

The PureUV technology is an innovative system that drastically improves the fluorescence effect while concurrently removing glare and improving contrast. If PureUV, add **-PUV** in the reference. Only for 365nm EFFI-Flex. Part number: EFFI-FLEX-WW-365-TR-P0-PUV

Optical considerations



How to change the lens positions of the EFFI-FLEX



1 Unscrew the M4 screws



2 Slide out the window



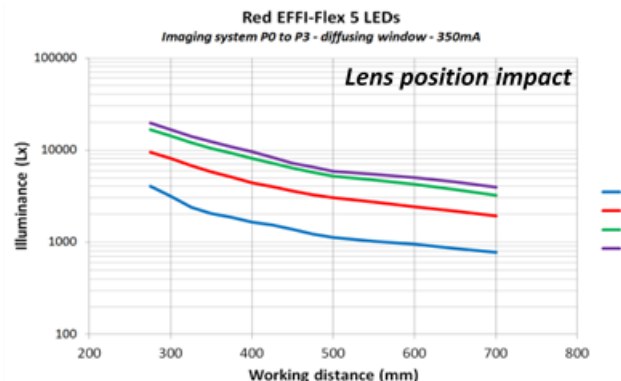
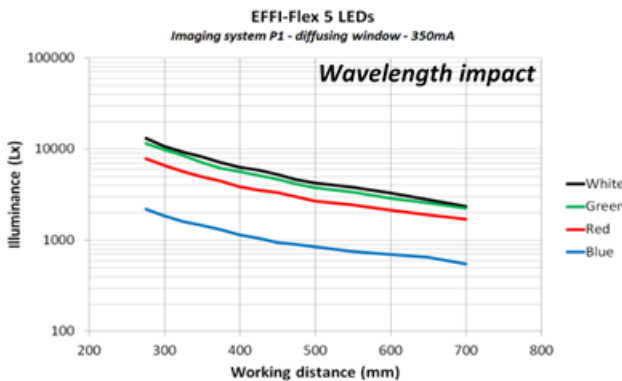
3 Slide out all lenses



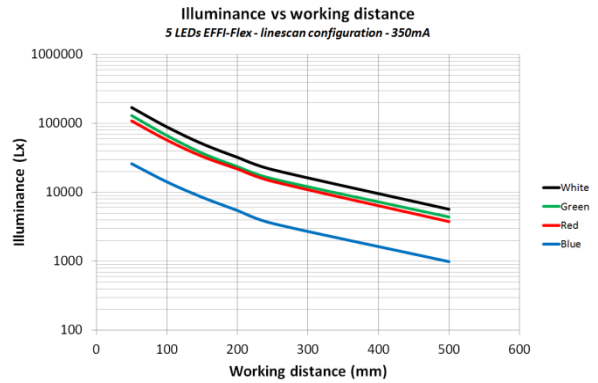
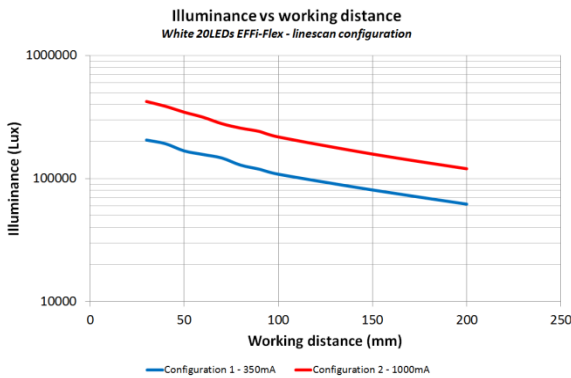
4 Replace the window and lenses in desired configuration

Illuminance vs the working distance

The following measurements are made with a white EFFI-FLEX, in continuous mode. Using the Overdrive mode of the AutoStrobe driver allows to **increase by 300%** these values.

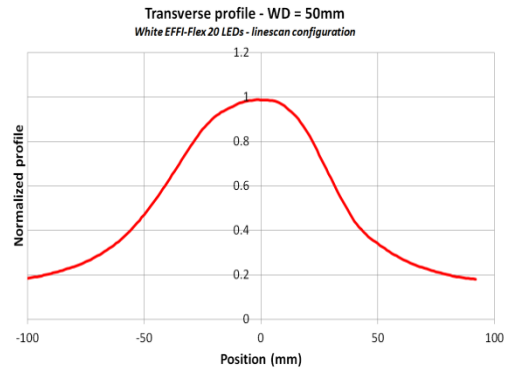
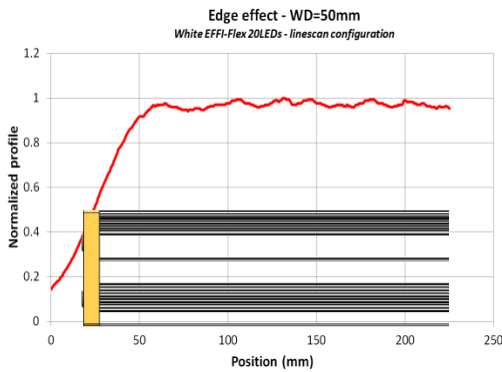
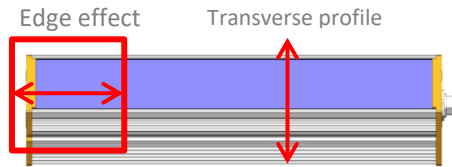


Linescan configuration



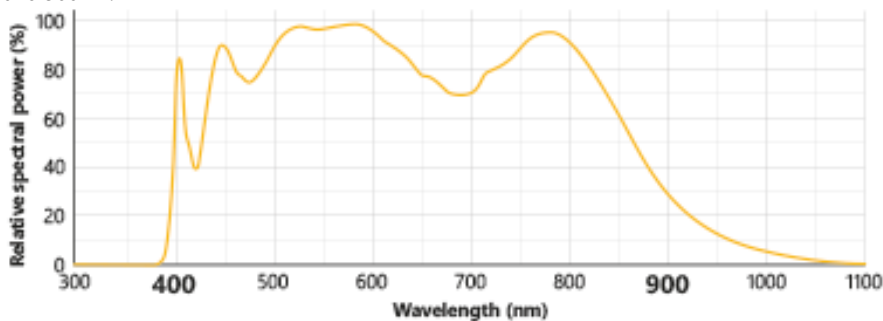
Note: Configuration 2 requires an additional thermal management system

Profile



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 »

For more information, please refer to the specific EFFI-FLEX-HSI documentation.

Electronical considerations



Contact arrangement

The EFFI-Flex requires 24V DC input power. Note the trigger pin **needs to be connected** either to the 24V DC signal for Continuous mode or to a PNP Trigger signal⁽²⁾ for Overdrive strobe mode.

Contact arrangement ¹	Pin number	Wire color	Designation ⁽¹⁾
 M12 Standard (A-coded) Male M12 Power (T-coded) Male Connector depends on power consumption (see p. 6)	1	Brown	+24V
	2	White	N/A
	3	Blue	GND
	4	Black	PNP TRIGGER⁽²⁾ Light ON if $V_{PNP} > 4.5V$ DC (Max 24V DC)



(1) Contact arrangement is different for RGB Option

(2) Or AIC (Analog Intensity Control) if ELS version

Driver Versions

	STANDARD VERSION → AutoStrobe driver	DIMMABLE VERSION → ELS driver (AIC instead of PNP)
Part number	EFFI-FLEX-XXX-ZZZ-WW-PP	EFFI-FLEX-XXX-ZZZ-WW-PP-ELS-VVV-UUU
Light output signal over time	<p style="text-align: center;">Respect a duty cycle lower than 30% in strobe mode</p>	

ELS Driver variants

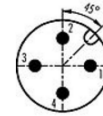
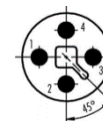
AIC control range			
Type of control	Standard 0-24V	Inversed 0-24V	Inversed 5-0V
Part number : UUU	ELS-VVV-24V	ELS-IN-VVV-24V	ELS-IN-VVV-5V
Light output intensity VS Analog signal input			

LED current VS cooling system			
Part number: VVV	Output current (mA) [0-100%]	EFFI-Flex (Standard)	EFFI-Flex-L2 (1LED /2 version)
350 (Standard)	0-350 mA		
500	0-500 mA	Duty cycle < 70% 	Duty cycle > 70%
700	0-700 mA	Duty cycle < 50% 	Duty cycle > 50%
1000	0-1000 mA	Duty cycle < 30% 	Duty cycle > 30%

Note: For the water cooling version, EFFI-Flex-CPT version is required. Please refer to the corresponding datasheet.

Power consumption

Number of LED	Max power consumption (W) (White – 2m cable)					
	Standard version		ELS 350mA	ELS 500mA	ELS 700mA	ELS 1000mA
	P _{Peak 2s}	P _{Cw} *				
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 Standard
(A-coded) Male
connector

 M12 Power
(T-coded) Male
connector

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

Signal consumption

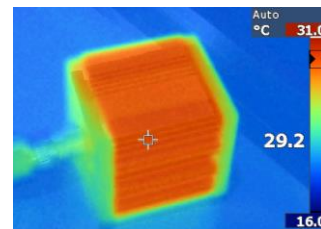
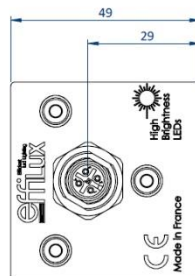
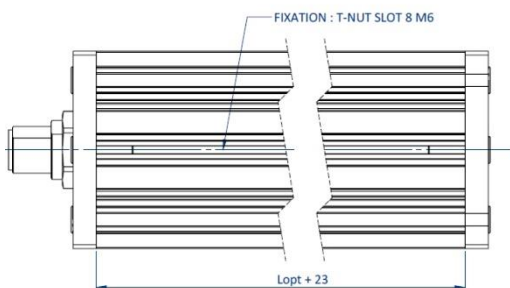
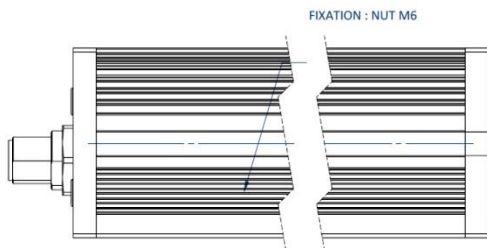
PNP Trigger Signal (Standard AutoStrobe version)			
Amount of LED	Consumption @5V (mA)	Consumption @10V (mA)	Consumption @24V (mA)
1	0.05	0.1	1.5
3	0.05	0.1	0.25
5	0.05	0.1	0.25
10	0.1	0.2	0.45
15	0.05	0.1	0.25
20	0.1	0.2	0.45
30	0.1	0.2	0.45
40	0.15	0.3	0.7
50	0.2	0.4	0.9
75	0.25	0.45	1.1
100	0.35	0.65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

AIC Signal (ELS version)				
ELS version (DIM)	ELS-IN- VVV -24V VVV = 350, 500, 700 or 1000	ELS-IN- VVV -5V VVV = 350, 500, 700 or 1000	ELS- 350 -24V	ELS- VVV -24V VVV = 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

Mechanical considerations (Dimensions in mm)



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



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

