DATASHEET

Efficient Led Lighting

effiLux

Uniform

Flexibility

Very intense

Lot of options

AUTOSTROBE

IP5X

CE

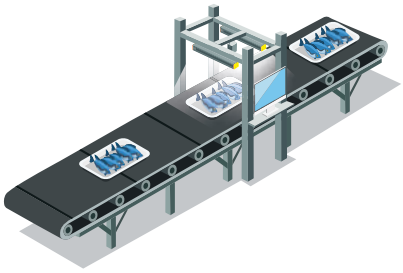
effiFLEX

Adjustable beam angle LED bar

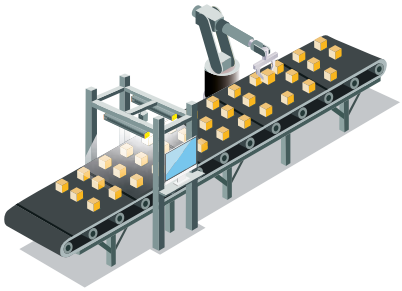
INTRODUCTION

Table of contents

Applications



Quality control



Pick and place

Related Product

See the product datasheets below for more information.

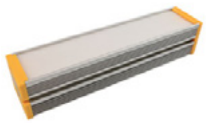
EFFI-FLEX-CPT

IP67 version

EFFI-FLEX-IP69K

IP69K version for
Food Industry & Washdown Environments

EFFI-FLEX-BL



Backlight version

EFFI-FLEX-HSI

Hyperspectral configuration

EFFI-FLEX-SWIR

SWIR configuration

PART NUMBERING

STANDARD VERSION

EFFI-FLEX - XXX - ZZZ - WW - PP

Number of LED	Wavelength	Windows	Lens position
1 (20 mm)	● **365*** (UV)	**TR**: Transparent	**P0**
3 (60 mm)	● **405** (UV)	**SD**: Semi-diffuse	**P1**
5 (100 mm)	● **465** (Blue)	**OP**: Opaline	**P2**
10 (200 mm)	● **525** (Green)		**P3**
... Every 5 LED (every 100mm)	● **625** (Red)		
145 (2900mm)	● **850** (Infrared)		
	○ **000** (White 5500K)		

(*) The UV 365nm wavelength is a specific configuration. Refer to the optical specifications.

AVAILABLE VERSIONS & OPTIONS

VERSIONS	
ELS	EFFI-FLEX-XXX-ZZZ-WW-PP-**ELS-VVV-UUU** Specific configuration for continuous mode with AIC (Analog Intensity Control). The standard configuration is in Autostrobe mode. VVV corresponds to the intensity current sent per LED (350, 500, 700 or 1000 mA). UUU correspond to the voltage range used for intensity control (24, IN-24 or IN-5).
L2: Economical version	EFFI-FLEX-**L2**-XXXX-ZZZ-WW-PP 1 LED every 40mm vs 1 LED every 20mm for standard
OPTICAL OPTIONS	
RGB	EFFI-FLEX-XXX-**RGB**-WW-PP RGB: Red, Green, Blue LED alternated. See corresponding annex.
WUI	EFFI-FLEX-XXX-**WUI**-WW-PP WUI: White, UV, Infrared LED alternated. See corresponding annex.
Kit with all diffusers	EFFI-FLEX-XXX-ZZZ-**KIT** 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..
Polarizer	EFFI-FLEX-XXX-ZZZ-WW-PP-**POL2** Eliminate glare from the workpiece making it easier to acquire a suitable image for the application with no hot spot.
Linescan film	EFFI-FLEX-XXX-**ZZZ-TR-P3-LS** Transforms the EFFI-Flex light into a uniform line light ideal for either brightfield or darkfield illumination. Classic configuration with TR window and lens in position P3.
Cylindrical lens	EFFI-FLEX-XXX-ZZZ-**TR-P1-LS-CYL** Focus the light, into a very bright line. Classic configuration with linescan accessory and lens in position P1.
Pure UV (for fluorenscence applications)	EFFI-FLEX-XXX-**365-TR-P0-PUV** Innovative EFFILUX system that drastically improves the fluorescence effect while concurrently removing glare and improving contrast. Only for 365nm.

GENERAL SPECIFICATIONS

effiFLEX		
Illumination Mode	AutoStrobe or Continuous with AIC	
Wavelengths	Single wavelength (from UV to IR) / White / Multispectral	
Power Supply	24V DC	
Connector(s)	**M12 - 5 pins**	**M12 Power - 4 pins**
Power Consumption	Depends on the number of LEDs	
Weight	60g + 60g per LED	
Dimensions	51mm x 49mm x length depends on the number of LEDs	
Material	Device body: Aluminum alloy & ABS; Window: PMMA	
Fastener	One T-slot on the back for 8mm T-nut (M6 recommended), and one slot on the side for M6 hex nut	
IP rating	IP50	
Operation environment	Temperature: 0°C to 40°C - Humidity: 20 to 85%RH (with no condensation) - Altitude: Up to 2000m	
Storage environment	Temperature: -20° to 60°C - Humidity: 20 to 85%RH (with no condensation)	
Informations	Overvoltage category I - Protective class III - Pollution degree 3	
Regulations & Marking	CE - UKCA	
Environmental Standards	RoHS Directives (2011/65/EU, 2015/863/EU and China RoHS) - REACH Regulation - WEEE Regulation	
Country of Origin	France	

OPTICAL SPECIFICATIONS

Many possible configurations in just one light

Diffusers

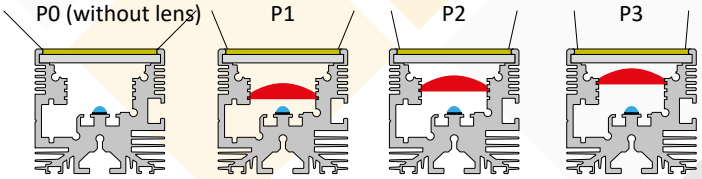
TR : Transparent

SD : Semi-diffuse

OP : Opaline

Depending on the uniformity needed for the application, the user can easily change the diffuser to satisfy the application requirements.

Lens position



The EFFI-Flex offers flexible lens positioning to control the beam angle. The user can adjust it by himself: the angle can be widened by moving the lens closer to the LEDs or narrowed by moving the lens further away from the LEDs.

UV365: Only Transparent and P0 (without lens) configuration is available.

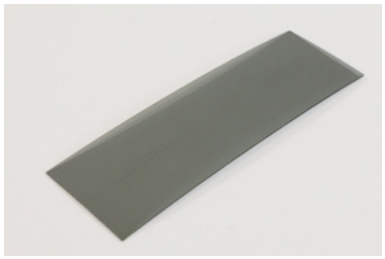
Kit option

With the KIT option, 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 ≤ 800mm.

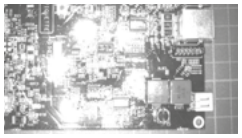
The KIT replaces WW-PP in the part number. Example: EFFI-FLEX-XXXX-ZZZ-**WW-PP** becomes EFFI-FLEX-XXXX-ZZZ-**KIT**

Polarizer

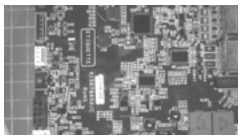


Using polarizers, on the Effilux light and on the camera, it is possible to eliminate glare from your workpiece making it easier to acquire a suitable image for the application.

The user can insert directly the polarizer inside the EFFI-Flex, under the window.



Without polarizer



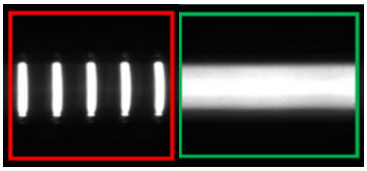
With polarizer

Important notes:

- The polarization is optimal with a TR window, the use of diffuser (SD or OP) can depolarize the light.
- This option isn't available for UV365.

Linescan configurations

Linescan film (TR-P3-LS)



Without Linescan film With Linescan film

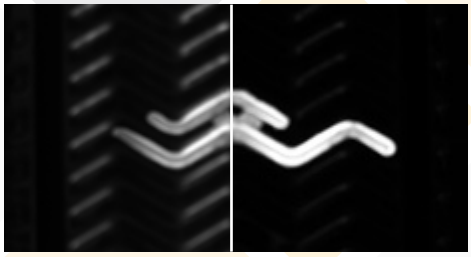
Notes: The linescan option isn't available for UV365.

Cylindrical lens (TR-P1-LS-CYL)

Used in combination with the internal lenses in the lowest position (P1), and the Linescan film (LS), the additional Cylindrical lens (CYL) allows to focus even more the light into a very bright line.

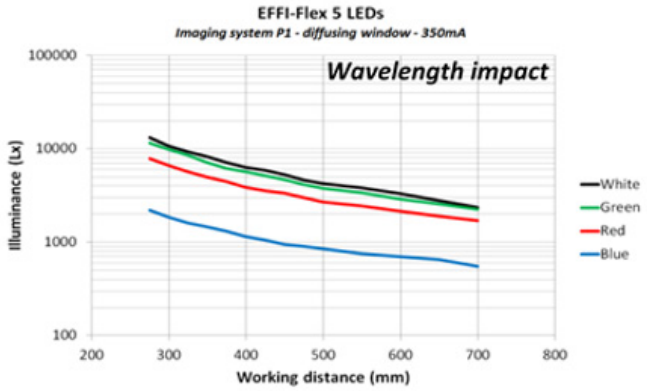
Pure UV

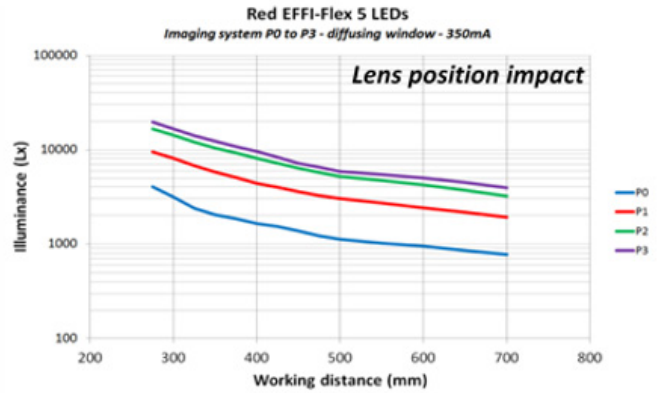
EFFILUX's PureUV technology, adapted to EFFI-Flex at 365nm, eliminates unwanted reflections and provides the best possible contrast for fluorescence applications



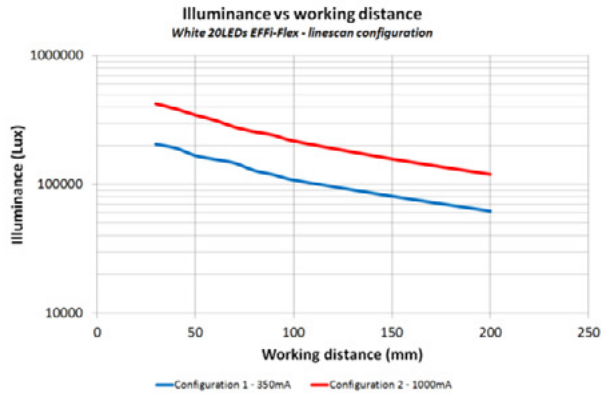
Illuminance vs working distance

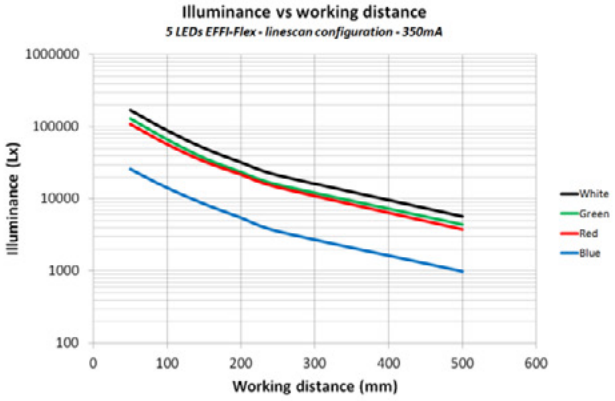
The following measurements are made with a white EFFI-FLEX, in continuous mode.
Using the Overdrive of the Autostrobe driver increases by 300% the values.





Linescan configuration





ELECTRONICAL SPECIFICATIONS

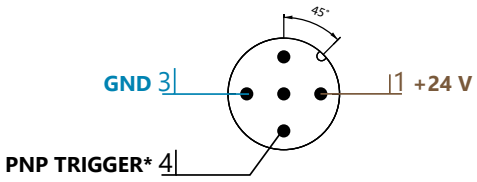
Overview

Two versions of the EFFI-FLEX exists:

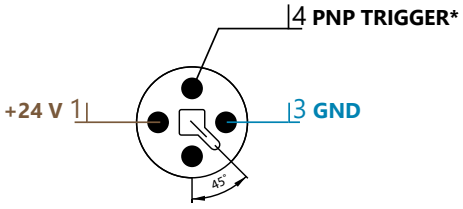
- **Autostrobe mode (default):** 300% current value with a max duty cycle of 30% and max pulse duration of 2s.
- **Continuous mode (ELS):** Light intensity between 20% and 100% monitored with the AIC pin.

Contact Arrangement

M12 5pins - male connector



M12P 4pins - male connector



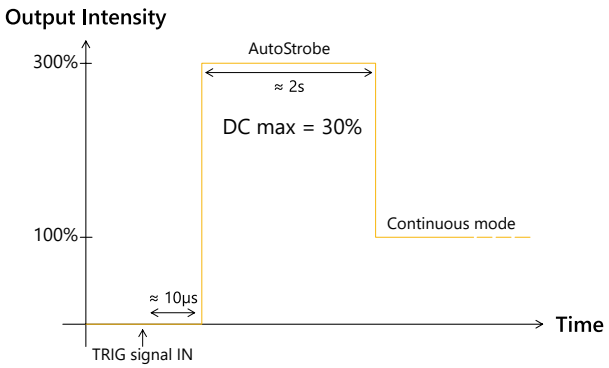
Notes:

- (*) AIC (Analog Intensity Control) for the ELS version.
- The EFFI-FLEX requires 24V DC input power. Light ON if VPNP > 4.5V DC (Max 24V DC).

Driver Versions

Standard version : Autostrobe driver

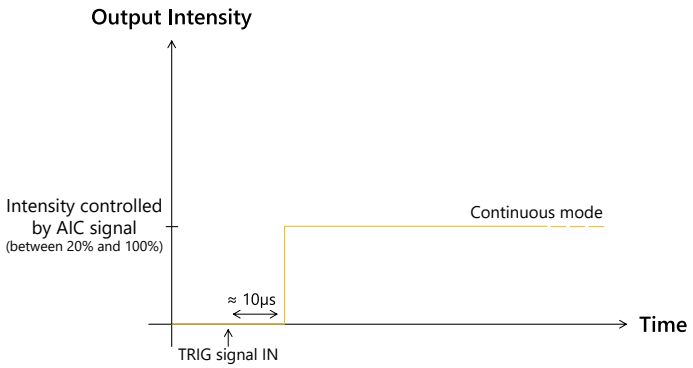
EFFI-FLEX-XXX-ZZZ-WW-PP



Dimmable version : ELS driver

(AIC instead of PNP)

EFFI-FLEX-XXX-ZZZ-WW-PP-ELS-VVV-UUU

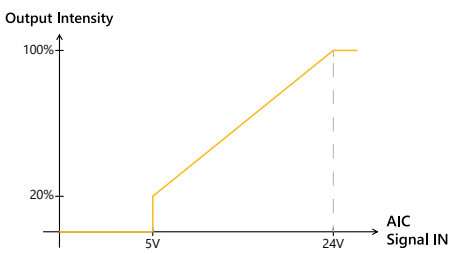


ELS Driver variants

AIC control range (UUU)

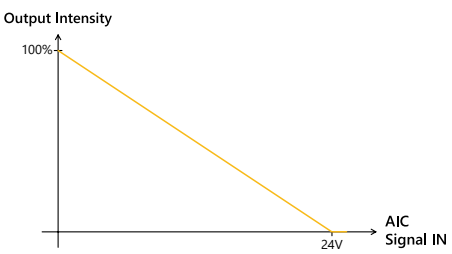
Standard 0-24V

ELS-VVV-24V



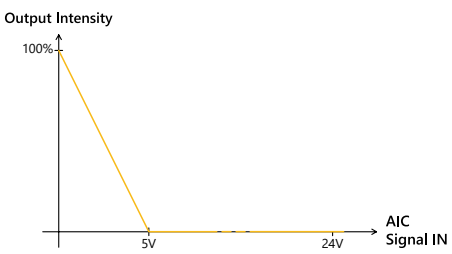
Inverse 0-24V

ELS-IN-VVV-24V



Inverse 5-0V

ELS-IN-VVV-5V



LED current (VVV) vs cooling system in ELS configuration

Part number: VVV	Output current (mA) [0-100%]	**EFFI-Flex** (Standard)		**EFFI-Flex-L2** (1LED/ 2 version)
350 (Standard)	0-350 mA			
500	0-500mA	Duty cycle <70% 	Duty cycle>70% 	
700	0-700mA	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}	Pcw*				
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	45	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

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

M12 standard (A-coded) Male connector M12 power (T-coded) Male connector

Importante notes: For the wavelengths 365 nm and 405 nm, you need to account for an additional 25% power consumption.

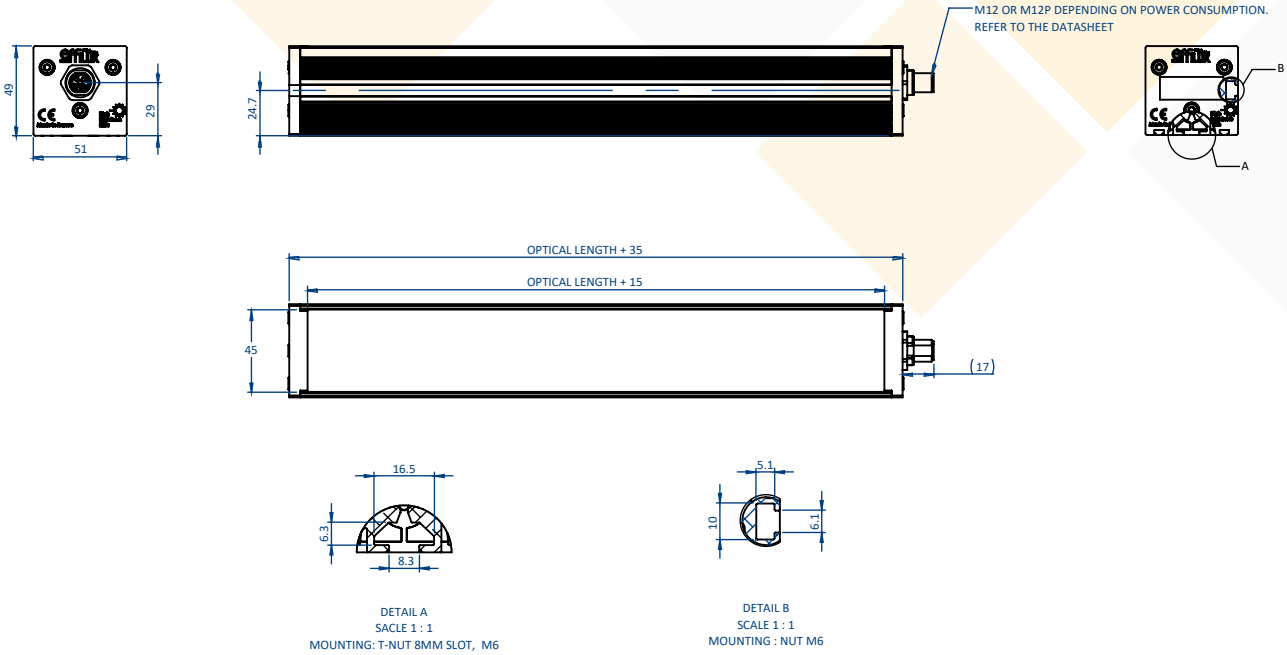
Signal consumptions

PNP Trigger Signal consumption (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 consumption (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 SPECIFICATIONS (DIMENSIONS IN MM)

Considering that optical length = 20 x nb_of_LED, here under the mechanical consideration.



ACCESSORIES

Please refer to the specific documentation for additional information on the accessories of the EFFI-FLEX.

Potentiometer

EFFI-DIMMER
EFFI-DIMMER2

Fasteners

T-Nut Kit: EFFV-BOLT-0011
Pivot joint Kit: EFFM-1-0002
Bracket: EFFM-1-0017/ 19/ 21

Extension cables

M12
2meters: EFFC-CAB-M12-FM-5-DD-L2
5meters: EFFC-CAB-M12-FM-5-DD-L5
10meters: EFFC-CAB-M12-FM-5-DD-L10
2meters: EFFC-CAB-M12-FM-5-CD-L2-LED
M12P
2meters: EFFC-CAB-M12P-FM-4-DD-L2
5meters: EFFC-CAB-M12P-FM-4-DD-L5
10meters: EFFC-CAB-M12P-FM-4-DD-L10

CONTACT INFORMATION

Please refer to the specific documentation (datasheet, user manual and drawing) for complementary information. Contents of this document are based on information available as of March -2025 and may be changed without prior notice.

Efficient Led Lighting

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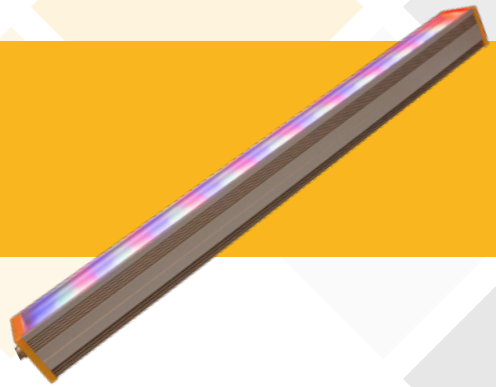
effiFLEX RGB/WUI

Multimode, Flexible & Multispectral bar light



Part-numbering

EFFI-FLEX - XXX	- ZZZ	- WW	- PP
Number of LED	**Wavelength**	**Windows**	**Lens position**
6* (120 mm)	**RGB** (Red, Green Blue)	**TR**: Transparent	**P0**
9* (180 mm)	**WUI** (White, UV, IR)	**SD**: Semi-diffuse	**P1**
12 (240 mm)		**OP**: Opaline	**P2**
15 (300mm)			**P3**
... Every 3 LED (every 60mm)			
39 (780mm)			

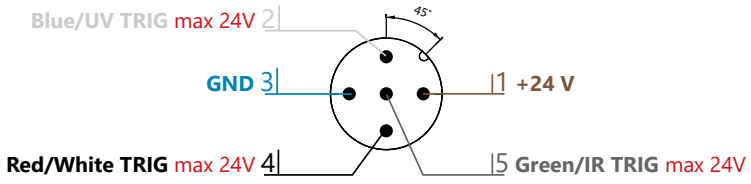
Note:

- (*) Only available in autostrobe vesion: Autostrobe starts at 6 LEDs and ELS versions at 12 LEDs.
- Other multispectral (multiple different wavelengths) configurations can be made as custom products.

COMPATIBLE VERSIONS	
ELS	EFFI-FLEX-XXX-ZZZ-WW-PP-**ELS-VVV-UUU** (no ELS-IN and only M12 configurations allowed)
COMPATIBLE OPTIONS	
Kit with all diffusers	EFFI-FLEX-XXX-ZZZ-**KIT**
Polarizer	EFFI-FLEX-XXX-ZZZ-WW-PP-**POL2**
Linescan film	EFFI-FLEX-XXX-**ZZZ-TR-P3-LS**
Cylindrical lens	EFFI-FLEX-XXX-ZZZ-**TR-P1-LS-CYL**

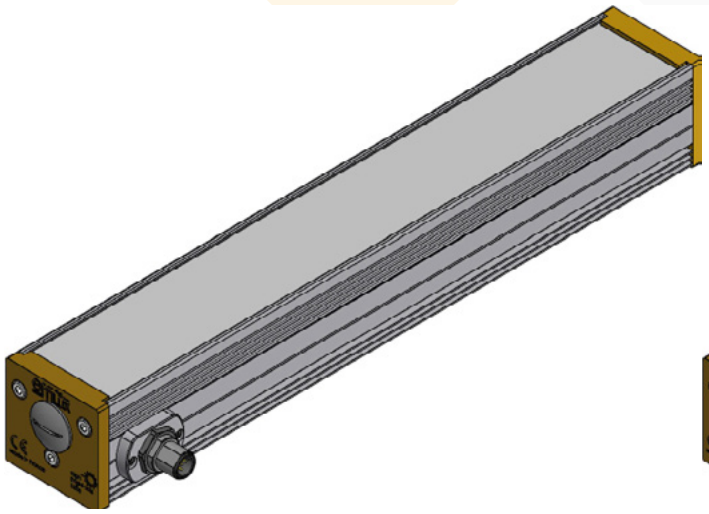
Wiring layout (M12 only)

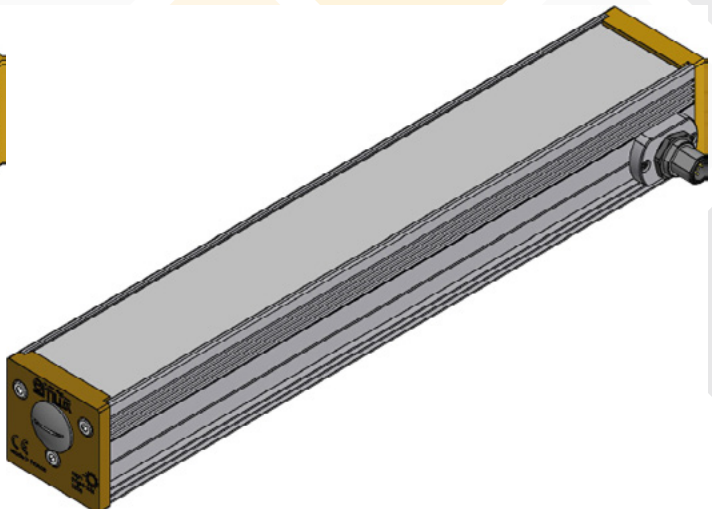
M12 - 5pins



ANNEX 2 - CONNECTORS & CABLE OPTIONS

Side connector - M12 & M12P





Standard

EFFI-FLEX-XXXX-ZZZ-WW-PP-SCXXX
EFFI-FLEX-XXXX-ZZZ-WW-PP-SCXXX-1M12P

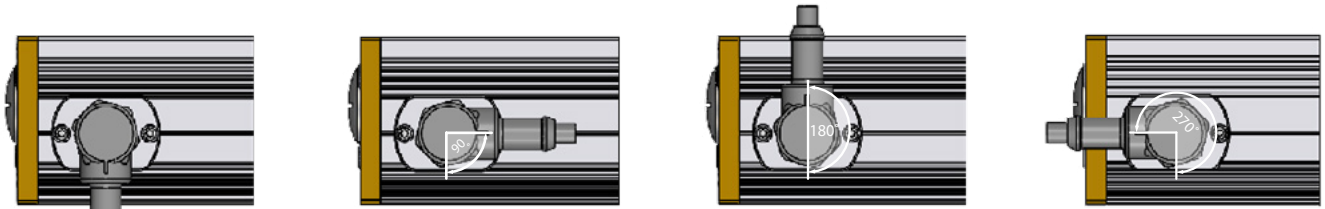
(M12 - 5 pins or M12P - 4 pins)
XXX: Angle connector orientation

Opposite

EFFI-FLEX-XXXX-ZZZ-WW-PP-SCXXX-O
EFFI-FLEX-XXXX-ZZZ-WW-PP-SCXXX-O-1M12P

(M12 - 5 pins or M12P - 4 pins)
-O: For the Opposite size
XXX: Angle connector orientation

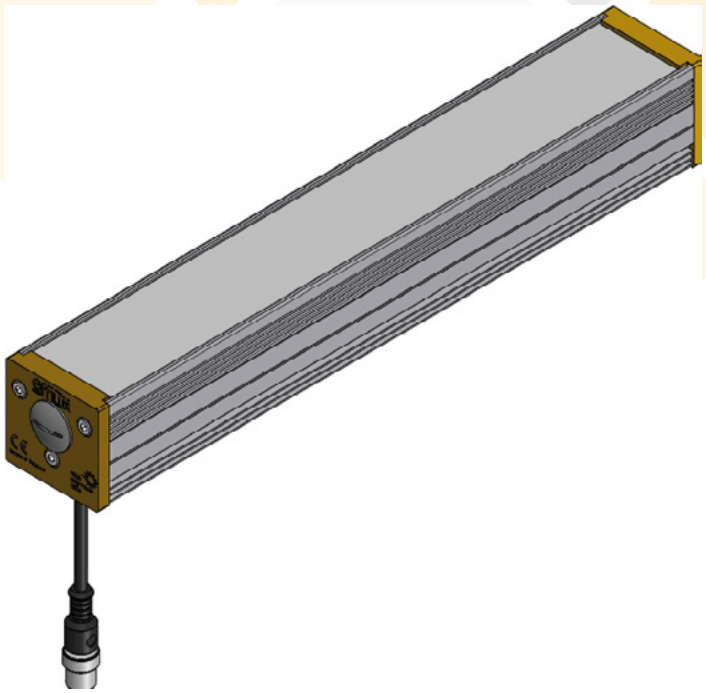
Angled Connector Orientation XXX - M12 & M12P



-SC0 -SC90 -SC180 -SC270

-SCXXX: [0 / 90 / 180 / 270]

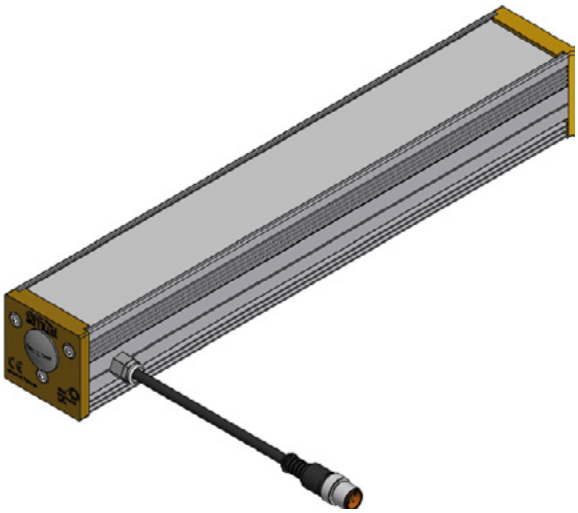
Back Side Cable - M12

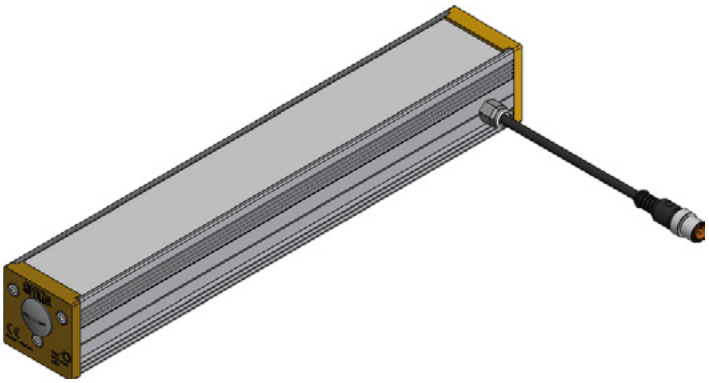


EFFI-FLEX-XXXX-ZZZ-WW-PP-BSC

Cable gland on the back side - Cable length: 500mm +/- 20mm
M12 - 5 pins
Not available with M12P connector. Please check the connector according to the light size.

Side Cable Gland - M12





Standard

EFFI-FLEX-XXXX-ZZZ-WW-PP-SCG

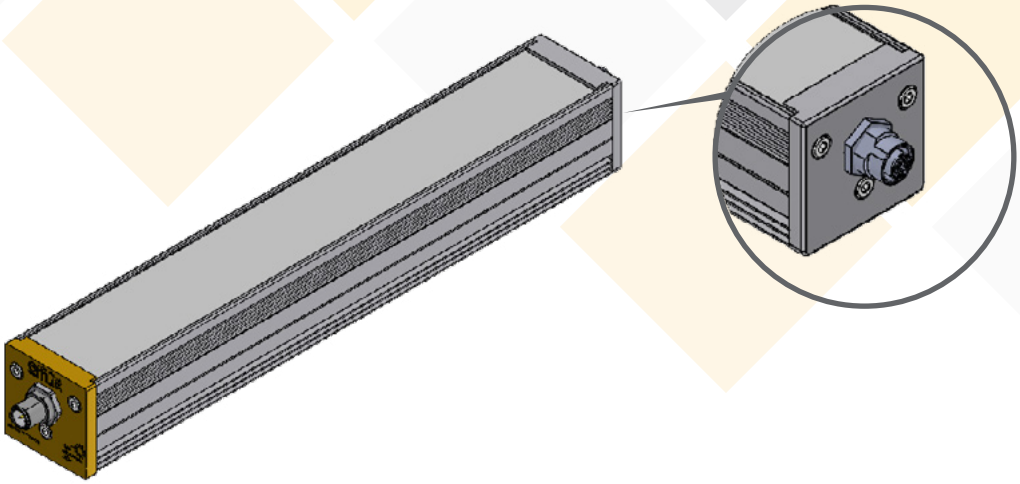
Cable gland on the side - Cable length: 500mm +/- 20mm
M12 - 5 pins

Opposite

EFFI-FLEX-XXXX-ZZZ-WW-PP-SCG-O

-O: For Opposite side
Cable gland on the side - Cable length: 500mm +/- 20mm
M12 - 5 pins

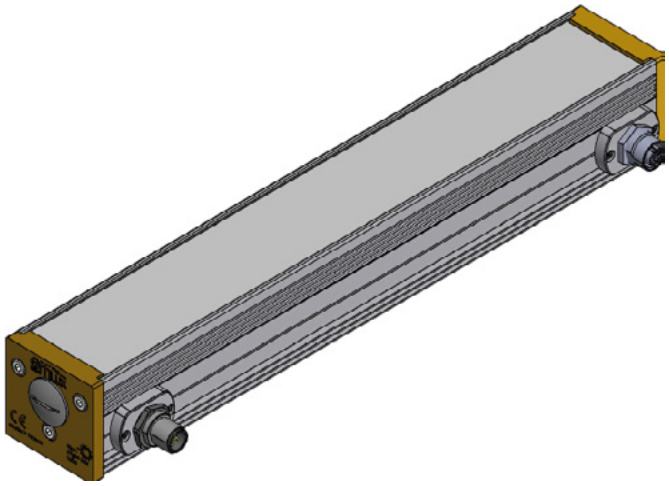
Chain on the Opposite Side - M12 & M12P



EFFI-FLEX-XXXX-ZZZ-WW-PP-CHAIN
EFFI-FLEX-XXXX-ZZZ-WW-PP-CHAIN-1M12P

One male connector on the standard side (M12 - 5 pins or M12P - 4 pins)
One female connector on the opposite side with Aluminum cap (M12 - 5 pins or M12P - 4 pins)

Chain with Side Connectors - M12 & M12P



EFFI-FLEX-XXXX-ZZZ-WW-PP-CHAIN-SCXXX
EFFI-FLEX-XXXX-ZZZ-WW-PP-CHAIN-SCXXX-1M12P

One male connector on the standard side (M12 - 5 pins or M12P - 4 pins)
One female connector on the opposite side with Aluminum cap (M12 - 5 pins or M12P - 4 pins)