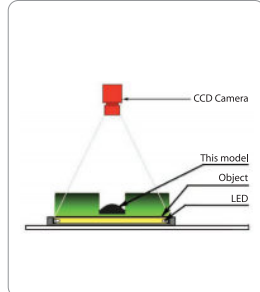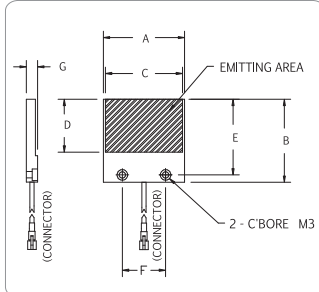# 2015
Backlight Illumination

BHDS & BHD SERIES- Side Illumination Back Light

BHDS & BHD series LED are illumination four corners into a diffuser block light shines from the flat surface of the block.
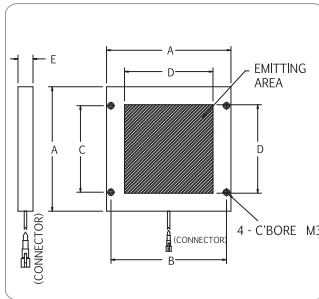
Application: inspection of making transparent object.

BHDS

BHD

Technical Specification:
- Color Red, Green, Blue and White
- 24V DC Input Power
- Continuous and Strobe Applications
- Compact Size
- Lighting Cable 500mm

Customize Lighting:
- Customize Sizes, Mounting requirements
- Color and Voltage Available
- Consult Technical Sales for More Information

Model	Dimensions (MM)							Color	Voltage / Watt	Current
	A	B	C	D	E	F	G			
BHDS-00-25X36-1-X	38.5	43.5	36.5	25	40	18.5	5.3	● ● ● ○	24V / 0.36W 24V / 0.48W	15mA 20mA
BHDS-00-31X58-1-X	60	43.5	58	31	40	40	5.3	● ● ● ○	24V / 0.72W 24V / 0.72W	30mA 30mA
BHDS-00-070-1-X	98.5	84.5	70	70	81	60	5.3	● ● ● ○	24V / 2.16W 24V / 2.16W	90mA 90mA

Model	Dimensions (MM)					Color	Voltage / Watt	Current
	A	B	C	D	E			
BHD-00-070-1-X	98.5	91.5	68.5	70	5.3	● ● ● ○	24V / 2.88W 24V / 2.88W	120mA 120mA
BHD-00-100-1-X	128.5	121.5	100	100	5.3	● ● ● ○	24V / 4.32W 24V / 3.84W	180mA 160mA

Backlight Illumination
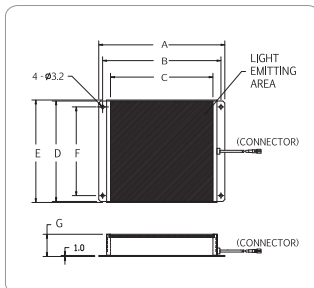
BHS3 SERIES - High Intensity Back Light

BHS3 series LED are arranged in a dense array and shine into a diffuser. The even light shines from the diffuser provides area illumination.

Application: lead frame inspection, shape recognition, size measurement.

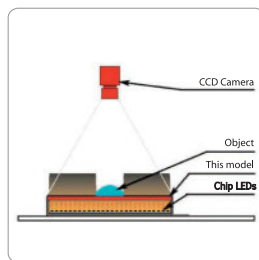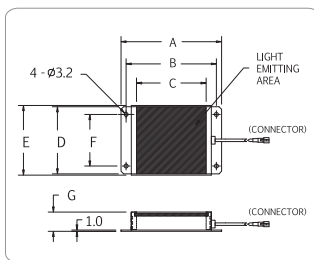## BHL3 SERIES - High Intensity Back Light

BHL3 series LED are arranged in a dense array and shine into a diffuser. The even light shines from the diffuser provided area illumination.

Application: lead frame inspection, shape recognition, size measurement.

BHS3

4 - Ø3.2
A
B
C
LIGHT EMITTING AREA
E D F
(CONNECTOR)
G
1.0
(CONNECTOR)

CCD Camera
Object
This model
Chip LEDs

BHL3

4 - Ø3.2
A
B
C
LIGHT EMITTING AREA
E D F
(CONNECTOR)
G
1.0
(CONNECTOR)

Technical Specification:
- Color Red, Green, Blue and White
- 24V DC Input Power
- Continuous and Strobe Applications
- Compact Size
- Lighting Cable 500mm

Customize Lighting:
- Customize Sizes, Mounting requirements
- Color and Voltage Available
- Consult Technical Sales for More Information

Model	Dimensions (MM)							Color	Voltage / Watt	Current
	A	B	C	D	E	F	G			
BHS3-00-020-X-X	52	44	28	22	24	10	15	●●○	24V / 0.72W / 24V / 1.20W	30mA / 50mA
BHS3-00-050-X-X	78	70	54	52	54	40	15	●●○	24V / 2.40W / 24V / 3.60W	100mA / 150mA
BHS3-00-080-X-X	108	100	84	82	84	70	15	●●○	24V / 6.00W / 24V / 4.80W	250mA / 200mA
BHS3-00-100-X-X	128	120	104	102	104	90	15	●●○	24V / 9.12W / 24V / 6.84W	380mA / 285mA

Model	Dimensions (MM)							Color	Voltage / Watt	Current
	A	B	C	D	E	F	G			
BHL3-00-050-X-X	78	70	54	52	54	40	23	●●○	24V / 2.40W / 24V / 3.60W	100mA / 150mA
BHL3-00-080-X-X	108	100	84	82	84	70	23	●●○	24V / 6.00W / 24V / 4.80W	250mA / 200mA
BHL3-00-100-X-X	128	120	104	102	104	90	23	●●○	24V / 9.12W / 24V / 6.84W	380mA / 285mA

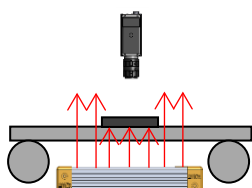Remarks : The current of BHS3-00-020 is changed.

HOMOGENOUS AND POWERFUL LED BACKLIGHT

EFFI-BL
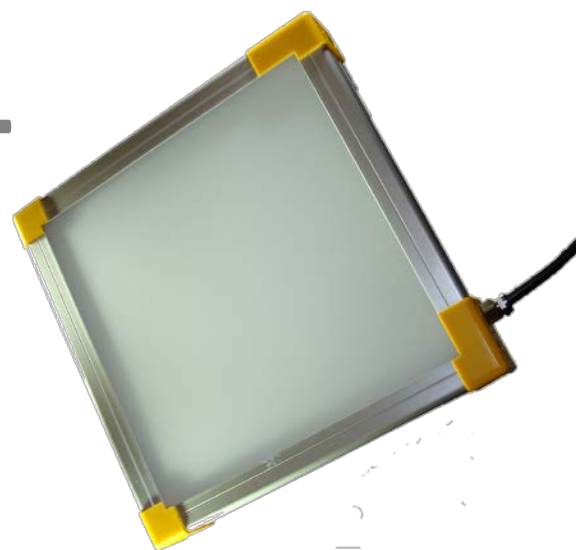
- ➤ **Intense** illumination
- ➤ **Homogeneity**
- ➤ **Standard** connections and fasteners
- ➤ **Anti-reflection coating** on the diffusive window
- ➤ Available from **50*50 mm²** to **1000*1500 mm²**
- ➤ **Long lifetime** and few maintenance

APPLICATIONS:

EFFI-BL has been designed by EFFILUX for inspection applications which require an in-direct illumination.

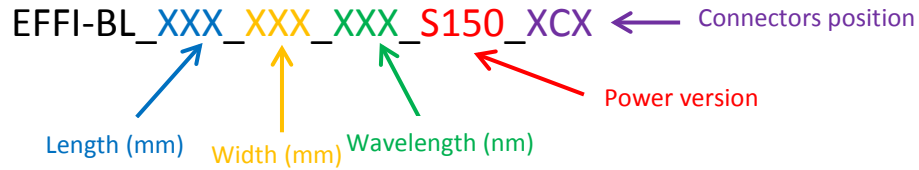Inspection: Edges measurement, absence/presence, size control…

Robotics: Object localization for pick and place.

OVERVIEW OF THE CHARACTERISTICS

Electronics	*Power supply*	24V DC
	Illumination mode	Continuous with a DIM process [0,24V]
	Connectors	M12 4 pins
	Power consumption	Related to the dimensions
	Cable length	500mm from the side to the connector
Optics	*Wavelength*	Various wavelengths (blue, red, green, IR and white)
	Output window	Opalin to homogenize the light repartition
Mechanics	*Thickness*	43.2mm
	Dimensions	Any multiple of 50mm
	Fastener	A groove all around the device
	Material	Base and side panels : Aluminum alloy ; Diffusion plate : acrylic
Environment	*Working temperature*	0°C to 50°C (no condensation)
	IP code	IP54

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TECHNICAL CHARACTERISTICS

How to create the EFFI-BL?

EFFI-BL_XXX_XXX_XXX_S150_XCX ← Connectors position

↖ Power version

Length (mm) Width (mm) Wavelength (nm)

Available wavelengths:

- White – reference **000**
- Blue – reference **465**
- Green – reference **525**
- Red – reference **625**
- Infrared – reference **850**

Other wavelengths are available upon request

Power version

- **150** mA configuration →Strobe mode. <u>Only for white (000)</u>

NB: Standard configuration is at 50mA

Other current options are available upon request

Multiple connectors' positions

- *XCA:* connectors on the same side (config. A)
- *XCB*: connectors on opposite side (config. B)

NB: Details on those two configurations are addressed in the following section

Additional configuration:

- Thin edge configuration : add a 'T' after the dimension that needs to be reduced
- The backlight is designed to present a connector on the longer side of the device. Nevertheless, it can be modified and be placed on the smallest side. In this configuration, a "C" is added at the end of the device
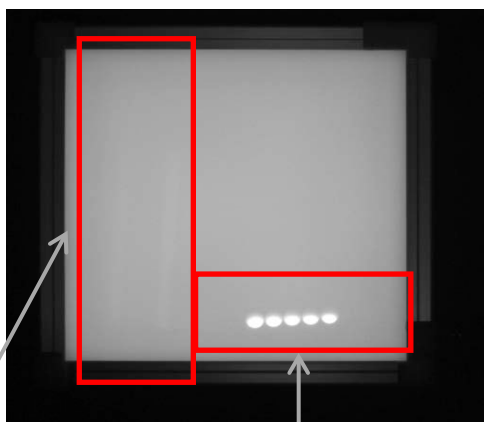
Optical characteristics

Homogeneity

Evaluation of the homogeneity
200mm x 200mm backlight

Homogeneity > 90%
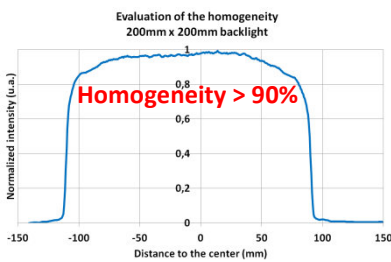
Pieces on the side of the device present a high contrast

Anti-reflection effect

Standard backlight

effiBL

No reflection

Ambient light reflection (neon light)

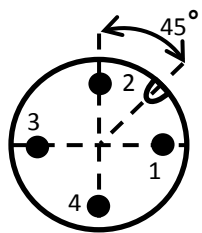**Bar light reflection**

Efficient Led Lighting
effilux CE RoHS

Electrical characteristics

Electrical connections of the backlight

The backlight is connected to the power supply using a 4 pins connector.

Pin number	Cable color	Designation
1	Brown	+24V
2	White	n.a.
3	Blue	GND
4	Black	DIM – *max 24V*

Make sure that you never exceed the maximum voltage.

The device is supplied with a 24V (±5%) constant voltage source.

Depending on the size of the device, different configurations are considered.

White device – 50mA		Optical length (mm)											
		50	100	150	200	250	300	400	500	600	800	1000	1500
Optical width (mm)	50	2	4	5	7	9	11	14	18	21	28	35	53
	100	4	7	11	14	18	21	28	35	42	56	70	105
	150	5	11	16	21	26	32	42	53	63	84	105	158
	200	7	14	21	28	35	42	56	70	84	112	140	210
	250	9	18	26	35	44	53	70	88	105	140	175	263
	300	11	21	32	42	53	63	84	105	126	168	210	315
	350	12	25	37	49	61	74	98	123	147	196	245	368
	400	14	28	42	56	70	84	112	140	168	224	280	420
	450	16	32	47	63	79	95	126	158	189	252	315	473
	500	18	35	53	70	88	105	140	175	210	280	350	525
	600	21	42	63	84	105	126	168	210	252	336	420	630
	800	28	58	84	112	140	168	224	280	336	448	560	840
	1000	35	70	105	140	175	210	280	350	420	560	700	1050

Power	Amount of connectors
Until 85W	1
85W to 170W	2
170W to 270W	3
270W to 370W	4
More than 370W	Specific configuration

Remark: For devices operating at 150mA, the amount of connectors will have to be discussed.
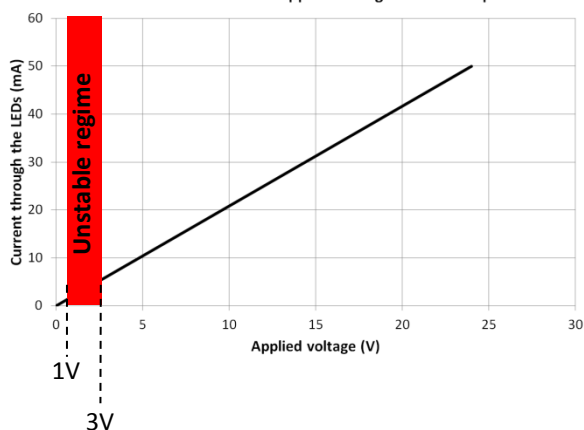
Electrical behavior of the device

The DIM pin has to be used: if not, the device is OFF.

Apply a constant voltage, *lying between 0V and 24V*, on this pin.

When a 24V voltage is applied, the device is at full power; if a 0V voltage is applied, the device is completely off.
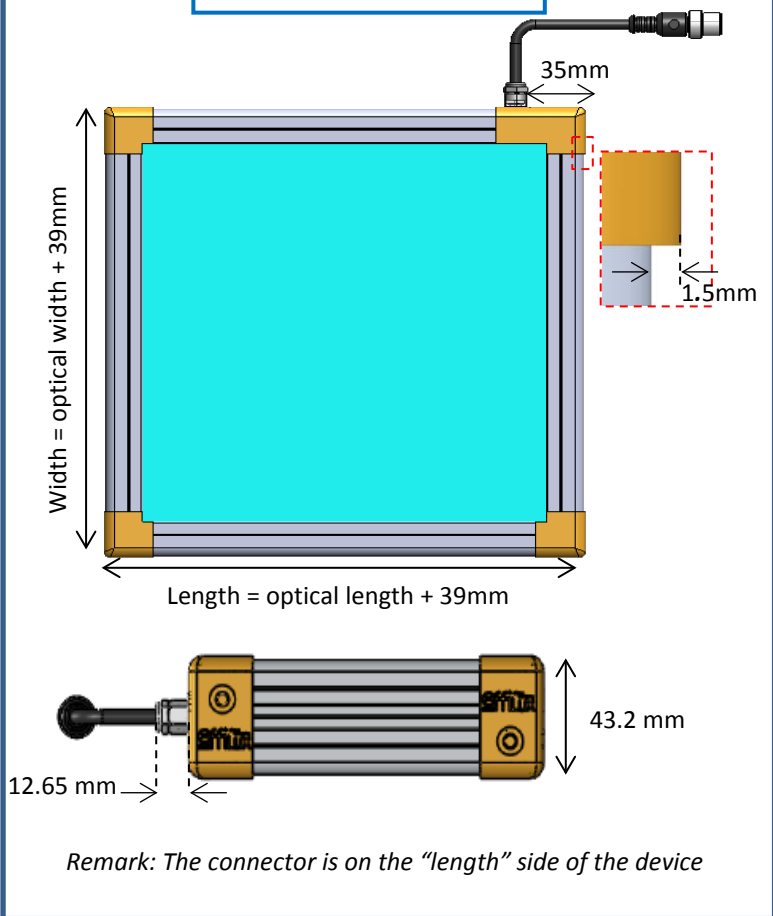

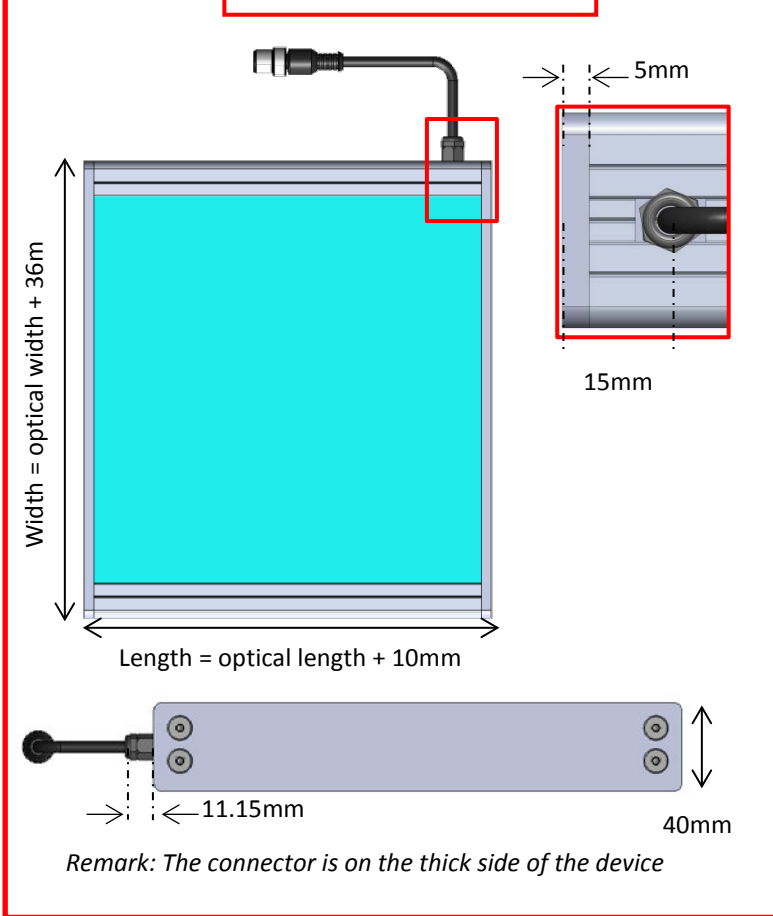Current evolution with the applied voltage on the DIM pin

Make sure that you never exceed the maximum voltage.

The device is supplied with a 24V (±5%) constant voltage source.

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Mechanical considerations

Standard configuration

35mm

Width = optical width + 39mm

Length = optical length + 39mm

43.2 mm

12.65 mm

1.5mm

Remark: The connector is on the "length" side of the device

Thin edge configuration

5mm

15mm

Width = optical width + 36m

Length = optical length + 10mm

11.15mm

40mm

Remark: The connector is on the thick side of the device

Devices are provided with a 500mm cable.
Depending on your needs, the light system can be designed according to the following mechanical constraints.
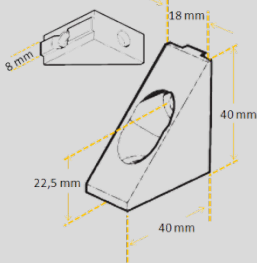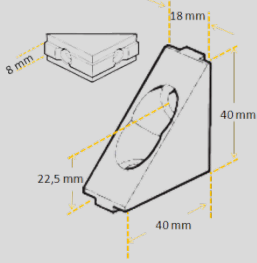
Configuration A

12.65 mm

90 mm   60 mm

Configuration B

14.15 mm

35 mm

effiLux — Efficient Led Lighting

CE RoHS

ACCESSORIES

	EFFILUX reference	Description
Mechanics	EFFV-Bolt_0011	T-nut to insert in the slot – For M6 screw
	EFFM_1_0017	Bracket to fasten the EFFI-BL (no ridge) *Delivered with 2 EFFV-Bolt_0011, 2 screws and 2 flat washers*
	EFFM_1_0019	Bracket to fasten the EFFI-BL (1 ridge) *Delivered with 2 EFFV-Bolt_0011, 2 screws and 2 flat washers*
	EFFM_1_0021	Bracket to fasten the EFFI-BL (2 ridges) *Delivered with 2 EFFV-Bolt_0011, 2 screws and 2 flat washers*
	EFFM_1_0002	Fastener used to simplify the projector integration (orientation) *Delivered with EFFV-Bolt_0011 and 2 M6x14 screws*
Electronics	EFFC-Cable_M12_0002 *Binder : 79 343 13 04*	M12 cable – 4 pins – 2m long
	EFFC-Cable_M12_0003 *Binder : 79 3430 17 04*	M12 cable – 4 pins – 5m long
	EFFC-Cable_M12_0004 *Binder : 79 3430 30 04*	M12 cable – 4 pins – 10m long
	EFFC-Cable_M12_0025 *Phoenix : 1456938*	M12 cable – 4 pins – High Flex- 1500mm long
	EFFC-Cable_M12_0026 *Phoenix : 1456941*	M12 cable – 4 pins – High Flex- 3000mm long

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High power LED bars
EFFI-Flex-BL for Backlight Web Inspection

- **Intense** and **uniform**
- **Standard** connections and fasteners
- **Full range of colors**: from blue to IR, white
- **Long lifetime** and few maintenance
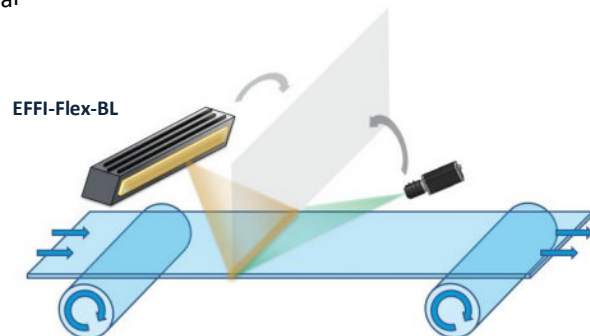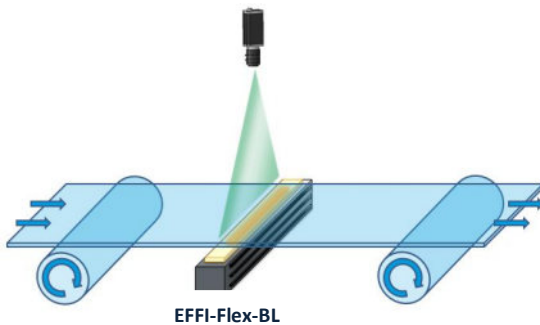- **Illumination length from 200 mm to 3.6 meters**

APPLICATIONs:

Web and linescan applications of:

- Paper
- Plastic film
- Any semi-transparent materials
- Glass
- Currency

Example : Foreign matter inspection for transparent material

EFFI-Flex-BL

EFFI-Flex-BL

OVERVIEW OF THE CHARACTERISTICS

Electronics	*Power supply*	24V DC
	Illumination mode	Continuous with DIM process [0-24V]
	Connectors	M12 4 pins
	Power consumption	Depends on the lenght
Optics	*Wavelength*	Various wavelengths (from blue to IR, white)
	Outout window	Opalin to homogenize the light repartition
Mechanics	*Width and height*	51mm x 49mm
	Fastener	2 rails: one on the back – another one on the side
	Material	Device body : Aluminum alloy ; Window: Acrylic
Environment	*Working temperature*	0°C to 50°C
	IP code	IP40 (option IP54)

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TECHNICAL CHARACTERISTICS

How to create the EFFI-Flex-BL?

EFFI-Flex-BL_XXX_XXX

Length*   Wavelength (nm)

Available wavelengths:
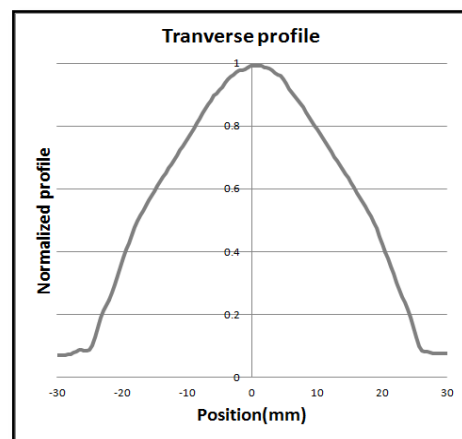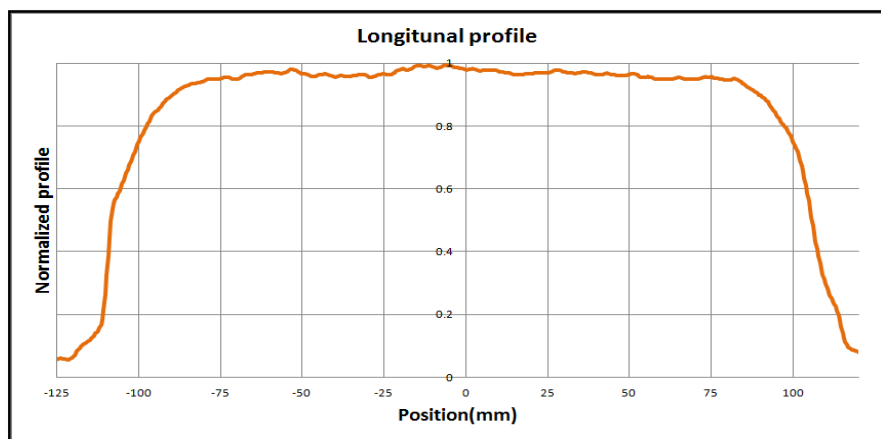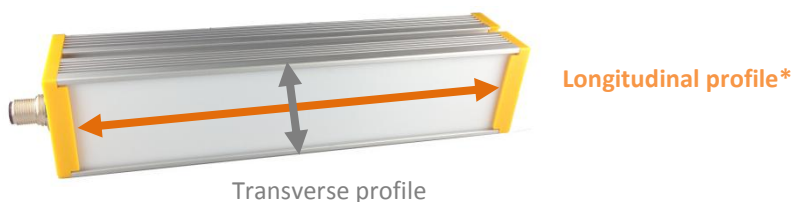- White: **000**
- Blue: **465**
- Green: **525**
- Red: **625**
- Far Infrared: **850**

Other wavelengths are available upon request

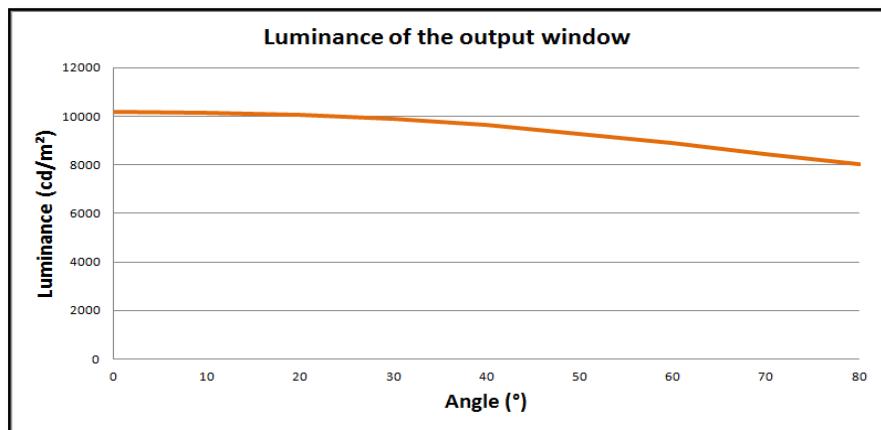* Minimum length: 200 mm – then, available in 100 mm increments

Optical characteristics

Homogeneity

Longitudinal profile*

Transverse profile

* length of backlight : 200 mm
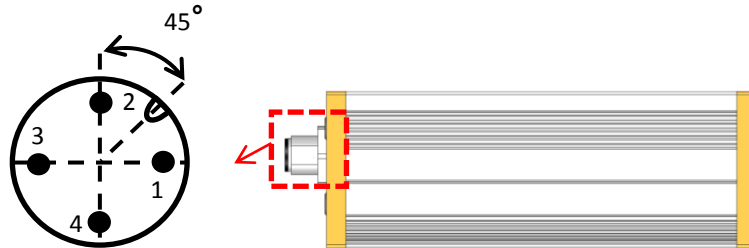
Optical power (luminance in the middle of the output window)

Electrical characteristics

Connector

To connect the product, use a M12 4 poles connector

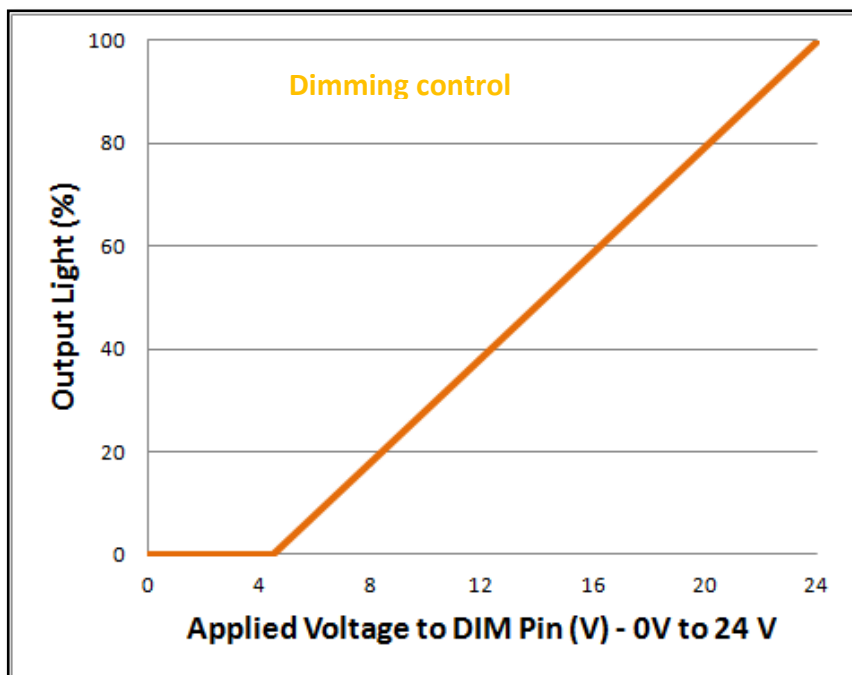| Pin number	Cable color	Designation
1	Brown	+24V ± 5%
2	White	n.a.
3	Blue	GND
4	Black	DIM – max 24V

Dimming control

The DIM pin has to be used: if not, the device is OFF.

The EFFI-Flex-BL, with a reference EFFI-Flex-BL_XXX _XXX, is supplied with a 24V constant voltage source.

Using the DIM pin, the light intensity can be linearly increased:

- 0V – OFF
- 24V - full power
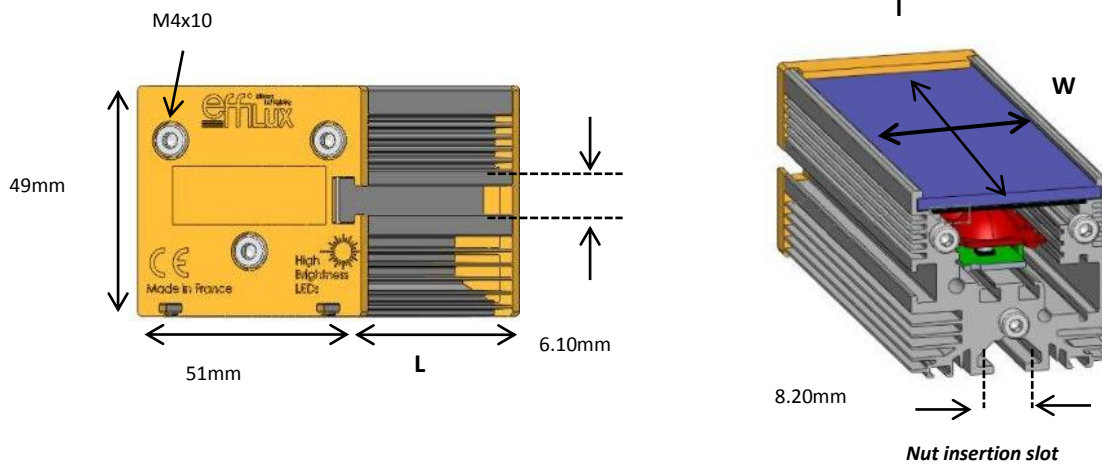

Electrical Power requirement

Apply the next formula to determine the electrical power of your lighting :

$$\text{Power}_{\text{electrical}} = \frac{\text{Length}_{\text{in mm}}}{100} * 5\,W$$

Example : EFFI-Flex-BL-500 is made of 5 segment

$$\text{Power}_{\text{electrical}} = \frac{\text{Length}_{\text{in mm}}}{100} * 5\,W = \frac{500}{100} * 5\,W = 25\,Watts$$
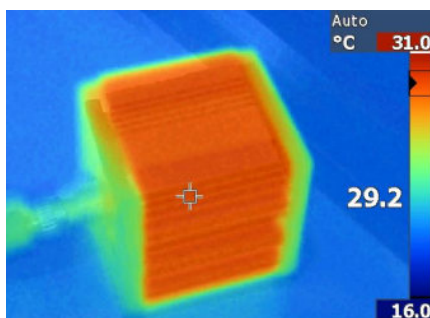
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Mechanical considerations

Nut insertion slot

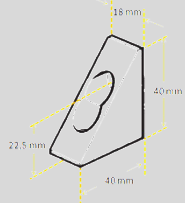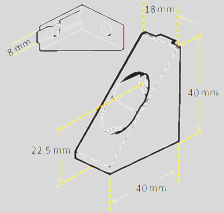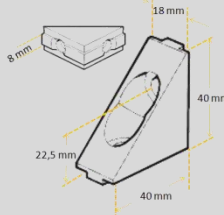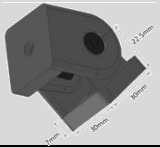| Designation	Electrical Power (@24 V) en Watt	L (mm)	W x l (mm)	Amount of connectors
EFFI-Flex-BL_200_XXX	10	235	45 x 215	1
EFFI-Flex-BL_300_XXX	15	335	45 x 315	1
EFFI-Flex-BL_400_XXX	20	435	45 x 415	1
EFFI-Flex-BL_500_XXX	25	535	45 x 515	1
EFFI-Flex-BL_600_XXX	30	635	45 x 615	1
EFFI-Flex-BL_700_XXX	35	735	45 x 715	1
EFFI-Flex-BL_800_XXX	40	835	45 x 815	1
EFFI-Flex-BL_900_XXX	45	935	45 x 915	1
EFFI-Flex-BL_1000_XXX	50	1035	45 x 1015	1
EFFI-Flex-BL_1600_XXX	80	1635	45 x 1615	1
EFFI-Flex-BL_1700_XXX	85	1735	45 x 1715	2
EFFI-Flex-BL_2500_XXX	115	2535	45 x 2515	2
EFFI-Flex-BL_3200_XXX	160	3200	45 x 3256	*Specific connector
EFFI-Flex-BL_4000_XXX	200	4000	45 x 4056	*Specific connector
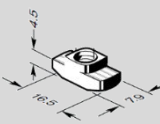
For length higher than 2500mm, a high power connector must be used (Cable RD24 male 4 pin – reference 7902322004 from Binder)

Thermal considerations

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

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Accessories

	EFFILUX reference	Description
Mechanics	EFFV-Bolt_0011	T-nut to insert in the slot – For M6 screw
	EFFM_1_0017	Bracket to fasten the EFFI-BL (no ridge) *Delivered with 2 EFFV-Bolt_0011, 2 screws and 2 flat washers*
	EFFM_1_0019	Bracket to fasten the EFFI-BL (1 ridge) *Delivered with 2 EFFV-Bolt_0011, 2 screws and 2 flat washers*
	EFFM_1_0021	Bracket to fasten the EFFI-BL (2 ridges) *Delivered with 2 EFFV-Bolt_0011, 2 screws and 2 flat washers*
	EFFM_1_0002	Fastener used to simplify the projector integration (orientation) *Delivered with EFFV-Bolt_0011 and 2 M6x14 screws*
Electronics	EFFC-Cable_M12_0002 Binder : *79 343 13 04*	M12 cable – 4 pins – 2m long
	EFFC-Cable_M12_0003 Binder : *79 3430 17 04*	M12 cable – 4 pins – 5m long
	EFFC-Cable_M12_0004 Binder : *79 3430 30 04*	M12 cable – 4 pins – 10m long
	EFFC-Cable_M12_0025 Phoenix : *1456938*	M12 cable – 4 pins – High Flex- 1500mm long
	EFFC-Cable_M12_0026 Phoenix : *1456941*	M12 cable – 4 pins – High Flex- 3000mm long
	EFFC-Cable_RD24_0001 Binder : *79 0232 20 04*	RD24 cable – 4 pins – 2000mm long
	EFFC-Connector_RD24_0001 *Binder : 99 0210 00 04*	RD24 connector – 4 pins – to be mounted – cable not supplied

Efficient Led Lighting

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