effiLux EFFI-Flex2 Multimode Flexible LED Bar Light User Manual

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GENERAL PRODUCT INFORMATION

Une version française de cette notice est disponible sur la page à partir de la page 10 de ce document

Thank you for purchasing an Effilux's product. To ensure proper use of the product, please read this User manual before use and keep it for your future reference. Any improper use voids the warranty. This product is an LED light used for machine vision and industrial inspection. Do not use the product for other applications, and be sure to follow the instructions below. Datasheets and drawings in PDF and/or CAD can be downloaded from the Effilux website: **www.effilux.com** The label(s) on the product always indicate(s) the reference, the power consumption and the serial number of the product. Be sure to check the content before using the product and handle the label(s) with care. The date of manufacturing is included in the serial number of the product: XXXXXXYYMM-ZZZ with YY corresponding to the year and MM to the month. If the label is missing or damaged and the content cannot be checked, please contact Effilux.

GENERAL WARNINGS AND PRECAUTIONS OF USE

Maintenance
The product must be switch off during any maintenance operation. To remove marks on the lens or on the window: Use alcohol-free lens cleaning fluid on a cleaning tissue. Few drops will suffice. Please clean gently. Always apply the fluid to a tissue rather than the lens itself. To clean optical components: Please wear gloves and use compressed air if there is dust.

Usage and storage environment

Operating environment	Temperature: 0 to 40°C – Humidity: 20 to 85RH% (without condensation) – Altitude: Up to 2000m
Storage environment	Temperature: -20 to 60°C – Humidity: 20 to 85RH% (without condensation)
Informations	Overvoltage category I – Protective class III – Pollution degree 3

Except if a specific IP rating is given for your product (refer to the «Dust and Water resistance (IP rating) » section), please install the product to locations with following conditions (Incorrect installation location may causes product failure)

Well-ventilated places with minimal dust.	Places free from any liquid, chemical product or steam .
Places free from corrosive or combustible gas.	Places that are not subject to sudden temperature cha nges.
Places away from water taps, boilers, humidifiers, air conditioners, heaters or stoves.	

User security

Incorrect use of the product may result in fire, electric shock, or other serious damages. Please ensure to follow below conditions. If an abnormal condition occurs (fuming, heat, noises, etc.), stop using the product immediately and turn the power off.

Do not disassemble or modify the product.	Do not look directly at the LED light without protection.
Do not try to fix any damages on the product by yourse lf.	Make sure special protective glasses are used with UV products (<420nm).
Do not touch the product with wet hands.	Do not use homemade cables.
Wire and keep the flying leads cables in a dry area (re gardless of the product's degree of protection).	Make sure the product does not show any moisture or liquid inside before switching it ON.
Make sure the power supply and the cable/connector are adapted to the product specifications.	The device must be powered by a 24V safety power s upply in accordance to local Electrical Safety rules
Do not inverse electrical polarity – check your connecti ons and the conventions.	The product packaging must be removed before use.

Standard version

EFFI-FLEX2 - ... - XXXX - ZZZ - WW - PP

LED Density	Optical Length [mm]	Wavelength [nm]	Window	Lens position
Ø (Standard if not specified)	60	405 (UV)	TR (Lightly-diffuse)	P0 (90°)
X2 (LED density x2)	100	465 (Blue)	SD (Semi-diffuse)	P1 (45°)
L2 (LED density ÷2)	200	525 (Green)	OP (Opaline)	P2 (25°)
L4 (LED density ÷4)	300	625 (Red)		P3 (10°)
	... All 100mm	850 (Infrared)		
	2900	000 (White)		

Available options: References

Please refer to the datasheet for the specifications of a product with option(s).

OPTICS	
Kit with all diffusers	EFFI-FLEX2-XXXX-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 ≤ 800mm.
Polarizer accessory	EFFI-FLEX2-XXXX-ZZZ-WW-PP-**POL**
UV Wavelength 365nm	EFFI-FLEX2-XXXX-**365-TR-P0**
Linescan film	EFFI-FLEX2-XXXX-ZZZ-**TR-P3-LS**
Cylindrical lens	EFFI-FLEX2-XXXX-ZZZ-**TR-P1-LS-CYL**
ELECTRONICS	
Specific continuous mode configurations	EFFI-FLEX2-XXXX-ZZZ-WW-PP-**ELS-UUU-VVV**
Customized software	EFFI-FLEX2-XXXX-ZZZ-WW-PP-**SWxxxxxx** Specific reference xxxxxx for each customized software
CONNECTORS	
Connector position and orientation, Cables position	EFFI-FLEX2-XXXX-ZZZ-WW-PP-**SCXXX/OSC/BSC/SCG**

AVAILABLE ACCESSORIES

Please refer to the specific documentations for additional information on the accessories of the EFFI-Flex2.

WINDOWS	Lightly-diffuse: EFFO-FLEX2-TR-XXXX Semi-diffuse: EFFO-FLEX2-SD-XXXX Opaline: EFFO-FLEX2-OP-XXXX	
POLARIZER	EFFO-FLEX2-POL-XXXX	
POWER SUPPLIES	Power supply: EFFI-PWR-WWW-24V-102-YY* Compact power supply: EFFI-SPWR-090W-24V-102-YY**	
CABLE with FLYING LEADS	With connector M12 – 5 pins	With connector M12P – 4 pins
	2 meters: EFFC-CAB-M12-F-5-D-L2 5 meters: EFFC-CAB-M12-F-5-D-L5 10 meters: EFFC-CAB-M12-F-5-D-L10	2 meters: EFFC-CAB-M12P-F-4-D-L2 5 meters: EFFC-CAB-M12P-F-4-D-L5 10 meters: EFFC-CAB-M12P-F-4-D-L10
EXTENSION CABLES	With connector M12 – 5 pins	With connector M12P – 4 pins
	2 meters: EFFC-CAB-M12-FM-5-DD-L2 5 meters: EFFC-CAB-M12-FM-5-DD-L5 10 meters: EFFC-CAB-M12-FM-5-DD-L10	2 meters: EFFC-CAB-M12P-FM-4-DD-L2 5 meters: EFFC-CAB-M12P-FM-4-DD-L5 10 meters: EFFC-CAB-M12P-FM-4-DD-L10
FASTENERS	T-Nut Kit: EFFV-BOLT-0011 Pivot joint Kit: EFFM-1-0002	
CAMERA FILTERS	EFFO-FLR-…	

ELECTRICAL INSTALLATION – STD CONNECTOR CONFIGURATION

Power Supply

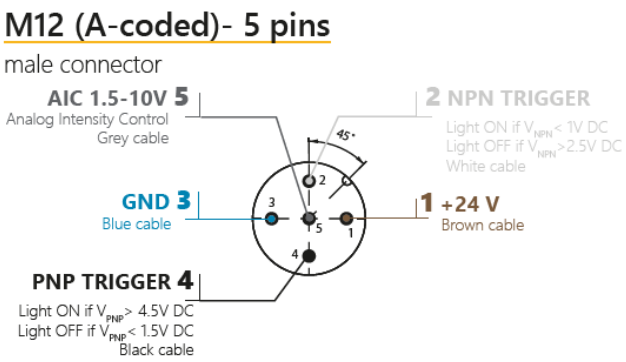
Power Supply		24V DC (+/-10%)			
Connector(s) *(See wiring layout page 4)*	Optical length	**60mm – 400mm**	**500mm – 1500mm**	**1600mm – 2900mm**
	Type	M12 (A-coded) – 5 pins	M12 Power (T-coded) – 4 pins	2x M12 Power (T-coded) – 4 pins
Power Consumption*	Peak	Max. 30W per 100 mm		
	Average	Max. 10W per 100mm		
Built-in driver version		Multimode (3 modes: AutoStrobe with overdrive intensity / Adjustable strobe / Dimmable continuous		
Analog Intensity Control (AIC)		The output optical power is adjustable from 10% to 100% by applying a signal from [1.5V-10VDC] Total voltage range [1.5V-24VDC] / Don't exceed 24V DC / Max. signal consumption: 4mA		
Autostrobe		450% Overdrive during 245 ms max then continuous at 100%		
		Max. duty cycle 30%		
		PNP trigger input: Light ON from 4.5V* to 24V / Don't exceed 24VDC / Max. signal consumption: 4mA *(Option NPN for size* ≥ 500mm, *on PIN 4: Light ON from 0V to 1V / Don't exceed 24V DC / Max. signal consumption: 4mA)*		
Response time		Max. 10µs *(Rise time included)*		

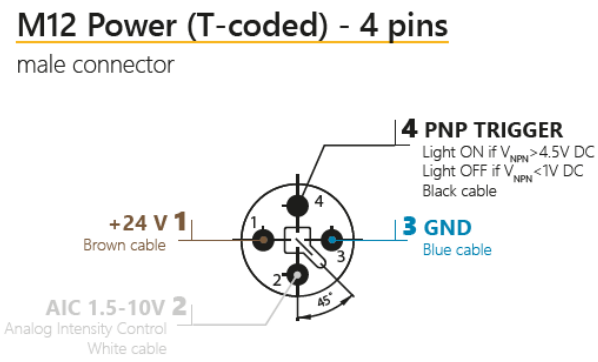
Note 1: The consumption values are maximum values, the exact power consumption of the product is always indicated on the product label.
Note 2: The PNP threshold voltage of 4.5V may vary with cable lengths and power consumption. Please refer to the following table.

Max. PNP voltage threshold (V)														
Cable length	Max. power consumption during overdrive in AutoStrobe mode													
	20W	30W	40W	60W	80W	100W	120W	145W	170W	220W	270W	320W	370W	420W
2m	4.3	4.4	4.4	4.5	4.6	4.6	4.4	4.5	4.5	4.6	4.6	4.7	4.8	4.9
5m	4.5	4.5	4.6	4.8	5.0	5.2	4.7	4.8	4.9	5.0	5.2	5.4	5.6	5.8
10m	4.6	4.8	5.0	5.4	5.8	6.3	5.1	5.3	5.5	5.9	6.3	6.8	7.4	8.1
15m	4.8	5.1	5.4	6.0	6.8	7.7	5.6	5.9	6.2	6.9	7.9	9.2		
20m	5.0	5.4	5.8	6.8	8.1		6.1	6.5	7.1	8.4				

How to connect the EFFI-Flex2 ?

Depending, the product length, the EFFI-Flex2 comes with one M12 connector 5 pins or M12 Power 4 pins or two M12 Power connectors 4 pins. (See the table with power consumption and connector definition below)





Notes:

- The EFFI-FLEX2 requires 24V DC input power.
- PNP trigger pin (or NPN) needs to be connected either to a trigger signal for AutoStrobe and Strobe mode or to a continuous signal for Continuous mode. (See Multimode driver guide on the following page)
- For light requiring M12P connector, the NPN trigger is optionnal. If NPN option, the PNP trigger input is replaced by the NPN trigger input. (See Multimode driver guide with NPN in Annex page 10)

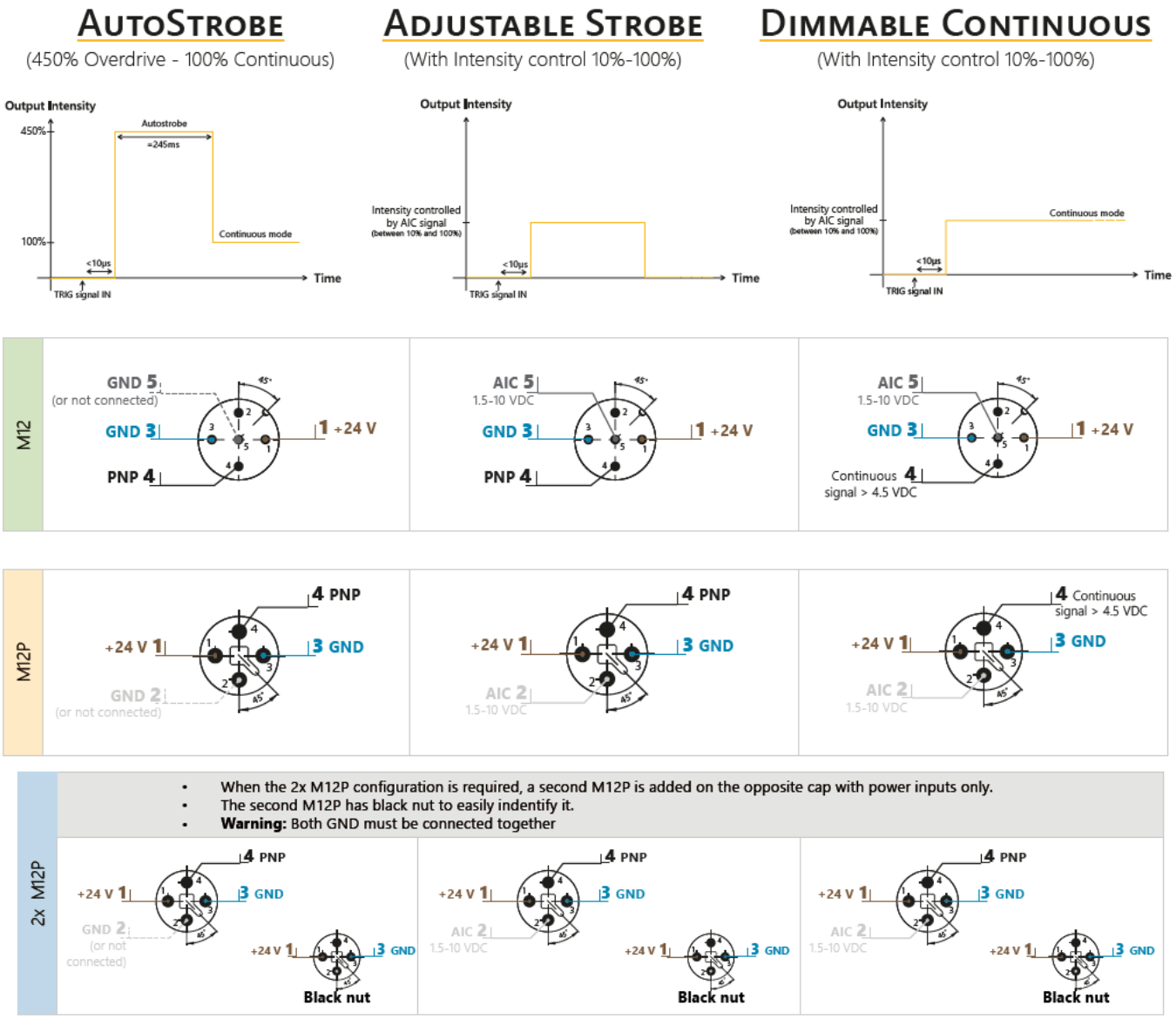
Power consumption and connector defintion

MAX POWER CONSUMPTION (+/- 5%) (White LED – Standard software – Duty cycle 30%)															
Optical Length XX XX (mm)	60	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400
Average power consumption	6W	10 W	20 W	30 W	40 W	50 W	60 W	70 W	80 W	90 W	100 W	110 W	120 W	130 W	140 W
Peak power consumption (max 245 ms)	18 W	30 W	60 W	90 W	120 W	150 W	120 W	210 W	240 W	270 W	300 W	330 W	360 W	390 W	420 W

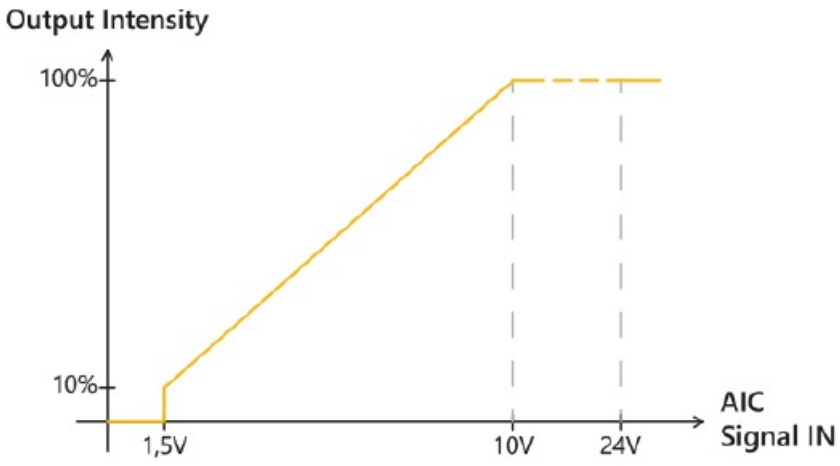
Note: These values are maximum values. The consumption may vary according to the wavelength and the software.

Multimode drvier guide (PNP logical example)

To access the different operating modes, the EFFI-Flex2 must be wired according to the guide below. Please refer to the adequate connector line depending on the light size.



Analog Intensity Control (AIC)



- The output intensity can be adjusted from 10% to 100% by applying a signal from [1.5V-10V DC].
- If VAIC = [0V-1V DC] or if not connected, the EFFI-Flex2 is in AutoStrobe mode by default.

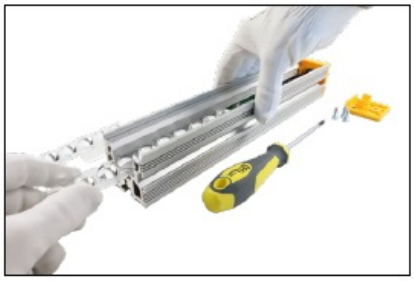
OPTICAL FLEXIBILITY

Be careful to always open the product from the side without the connector.

How to change the optical configuration?

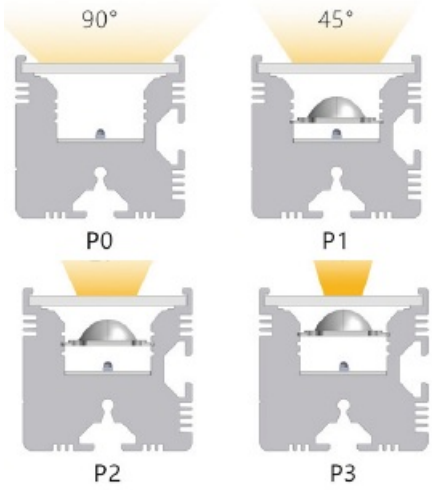
The EFFI-Flex2 offers flexible lens positioning to control the beam angle and different type of diffusers to adapt the uniformity. The user can easily change the diffuser and the lens position.

Unscrew the M4 screws and remove the cap (without connector)



Slide out the window and all lenses

Place the lenses & window in desired configuration



How to install a polarizer accessory?

Open the EFFI-Flex2 and insert the TR window

Insert the polarizer under the TR window

Close the product

Important note: The polarization is optimal with a TR window, the use of SD or OP window can depolarize the light.

How to install a linescan film in your Effi-Flex ?

Unscrew the M4 screws.

Place the lens in position P3. Insert the linescan under the TR window.

Close the product.

Important note: If used with a polarizer, be sure to put the polarizer on top of the linescan.

How to install a cylindrical lens in your Effi-Flex ?

Unscrew the M4 screws.

Remove the window and place the lens in **position P1**.

Insert the cylindrical lens window and the linescan bellow it.

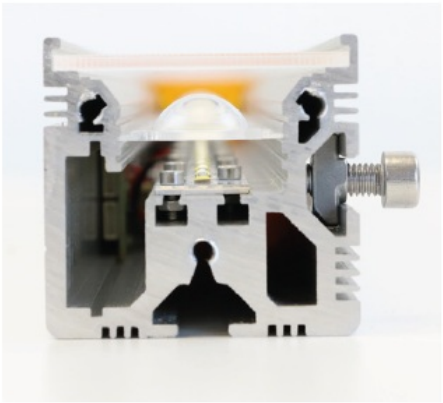
Close the product.

MECHANICAL CONSIDERATION

General

IP rating	IP5X (dust protected)
Dimensions	60mm x 47mm x Length = Optical length + 35mm
Fixing	One T-slot on the back for M6 T-nuts 8mm slot (2x M6 T-nuts included)

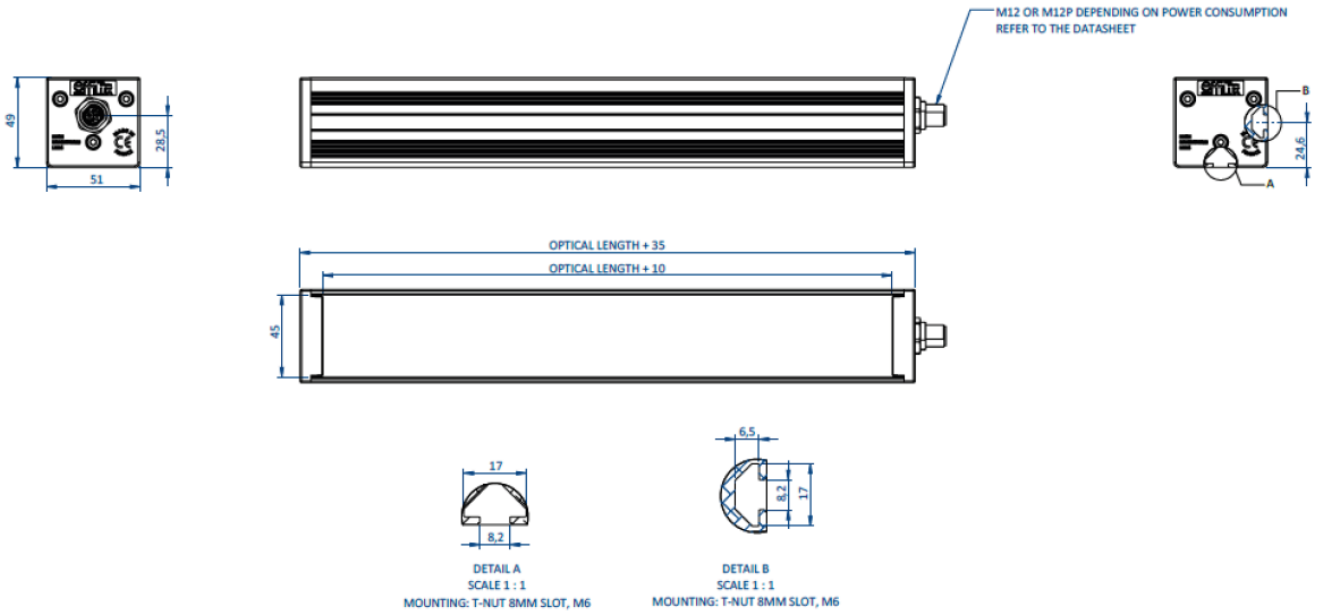
Product installation
EFFI-Flex2 is easily fixed to a frame with its T-NUT M6 nuts, see picture below:



Lateral T-NUT

T-NUT at the rear of the product

Drawing



REGULATIONS COMPLIANCY

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 – Manufactured by Effilux

ENVIRONMENTAL REGULATIONS

EU RoHS Directive

The EU RoHS Directive is short for the «Restriction Of use of certain Hazardous Substances in electrical and electronic equipment». The EU RoHS Directive (2011/65/EU) restricts the use of specifics hazardous substances for the new electronic equipment marketed in the EU. The Directive (EU) 2015/863 amending 2011/65/EU was published in 2015 to restrict the use of specific hazardous substances, including six conventional substances, lead (<0.1%), mercury (<0.1%), cadmium (<0.01%), hexavalent chromium (<0.1%), polybrominated biphenyl (PBB) (0.1%) and polybrominated diphenyl ether (PBDE) (<0.1%), as well as four substances (phthalate compounds), bis(2-Ethylhexyl) phthalate (DEHP) (<0.1%), benzyl butyl phthalate (BBP) (<0.1%), dibutyl phthalate (DBP) (<0.1%), diisobutyl phthalate (DIBP) (<0.1%). Our products do not contain the above certain hazardaous substances in excess of the maximum permitted concentration. However, this does not apply if the product falls under the exemption.

China RoHS

China RoHS Directive is formally known as «Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products», which was implemented on July 1rst, 2016 in China. Same as EU RoHS Directive (2011/65/EU), this regulation restricts the usage of same six substances.

WARRANTY

EFFILUX products come with a warranty of 2 years (one year for radiant quantity), starting from EFFILUX shipping date. Any improper use voids the warranty.
Exceptions: UV products (<420nm): 1-year warranty / Chillers: 1-year warranty / Polarizers are excluded from

warranty.
For more information, please refer to the warranty information available on Effilux's website.

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 December-2022 and may be changed without prior notice.

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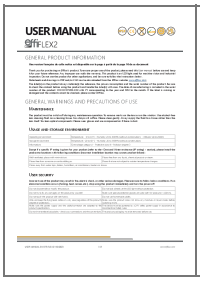
Documents / Resources

	effiLux EFFI-Flex2 Multimode Flexible LED Bar Light [pdf] User Manual EFFI-Flex2, EFFI-Flex2 Multimode Flexible LED Bar Light, Multimode Flexible LED Bar Light, Flexible LED Bar Light, LED Bar Light, Bar Light, Light

References

- High power LED Lighting for machine vision