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FLEX2-IP67 LED Light

effilux FLEX2-IP67 LED Light User Manual

Contents

effilux FLEX2-IP67 LED Light

GENERAL PRODUCT INFORMATION

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 switched 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 and gentle clean is enough. Always apply the fluid to a tissue rather than the lens itself. To clean optical components: Wear gloves and use compressed air if there is dust.

Operating and storage environments

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 changes.
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 yourself.	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 (regardless 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 supply in accordance to local Electrical Safety rules
Do not inverse electrical polarity – check your connections and the conventions.	The product packaging must be removed before use.

PART NUMBERING

Standard version

EFFI-FLEX2-IP67 - XXXX - ZZZ - WW - PP

Optical Length [mm]	Wavelength [nm]	Window	Lens position
60	● 365* (UV)	TR (Transparent)	P0 (90°)
100	● 405 (UV)	SD (Semi-diffuse)	P1 (45°)
200	● 465 (Blue)	OP (Opaline)	P2 (25°)
300	● 525 (Green)	KIT (All diffusers)	P3 (10°)
... Every 100mm	● 625 (Red)		
2900	● 850 (Infrared)		
	○ 000 (White)		

(*) The UV 365nm wavelength is a specific configuration.

(*) The UV 365nm wavelength is a specific configuration.

Available options: References

OTHER VERSIONS – Compatible with each other	
Watercooling version	EFFI-FLEX2-IP67-**WTR**-XXXX-ZZZ-WW-PP Allow the use of a watercooling system for thermal regulation.
Other LED densities versions L2 – Economical X2 – High uniformity	EFFI-FLEX2-IP67-**L2**-XXXX-ZZZ-WW-PP 1 LED every 40mm vs 1 LED every 20mm for standard (See corresponding Annex)
	EFFI-FLEX2-IP67-**X2**-XXXX-ZZZ-WW-PP 1 LED every 10mm vs 1 LED every 20mm for standard (See corresponding Annex)
OPTICAL OPTIONS	
Polarizer accessory	EFFI-FLEX2-IP67-XXXX-ZZZ-WW-PP-**POL** *(See page 5)*
Linescan film	EFFI-FLEX2-IP67-XXXX-ZZZ-**TR-P3-LS** *(See page 5)*
Cylindrical lens	EFFI-FLEX2-IP67-XXXX-ZZZ-**TR-P1-LS-CYL** *(See page 5)*
ELECTRONICAL OPTIONS	
Continuous boost (ELS XXX)	EFFI-FLEX2-IP67-XXXX-ZZZ-WW-PP-**ELSxxx** (xxx = 500 / 700 / 1000) For experts who need a power boost in continuous mode. Only available in WTR version.
Customized software	EFFI-FLEX2-IP67-XXXX-ZZZ-WW-PP-**SWxxxxxx** Specific reference xxxxxx for each customized software.
CONNECTOR OPTIONS	
Connector position and orientation, Cables position	EFFI-FLEX2-IP67-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-IP67.

POWER SUPPLIES	Power supply: EFFI-PWR-WWW-24V-102-YY* Compact power supply: EFFI-SPWR-090W-24V-102-YY**

	With connector M12 – 5 pins	With connector M12P – 4 pins
CABLE with FLYING LEADS	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
	With connector M12 – 5 pins	With connector M12P – 4 pins
EXTENSION CABLES	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 – STANDARD CONFIGURATION

Power Supply		24V DC (+/-10%)		
Connector(s) *(See wiring layout)*	Optical length	**60mm – 400mm**	**500mm – 1600mm**	**1700mm – 2900mm**
	Type	M12 (A-coded) – 5 pins	M12 Power (T-coded) – 4 pins	2x M12 Power (T-coded) – 4 pins
Power Consumption*	Continuous mode	Max. 10W per 100 mm of optical length		
	Autostrobe mode (peak)	Max. 40W per 100mm of optical length		
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 20% to 100% by applying a signal from [2V-10VDC] Total voltage range [2V-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 PIN4: 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.

Power supply dimensioning & connectors

MAX POWER CONSUMPTION (+/- 5%)

(White LED – Standard software)

Optical Length XXXX (mm)	60	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400
In Continuous mode	<10 W	10 W	15 W	20 W	25 W	35 W	40 W	45 W	50 W	60 W	65 W	70 W	75 W	80 W	90 W
In AutoStrobe mode (peak)	<30 W	30 W	60 W	95 W	130 W	170 W	205 W	240 W	280 W	315 W	350 W	390 W	425 W	460 W	500 W

Optical Length XXXX (mm)	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900
In Continuous mode	95 W	100 W	105 W	115 W	120 W	125 W	130 W	140 W	145 W	150 W	155 W	160 W	170 W	175 W	180 W
In AutoStrobe mode (peak)	535 W	570 W	610 W	645 W	685 W	720 W	755 W	790 W	830 W	865 W	905 W	940 W	975 W	1010W	1050W

M12 – 5 pins	M12P – 4 pins	2x M12P – 4 pins

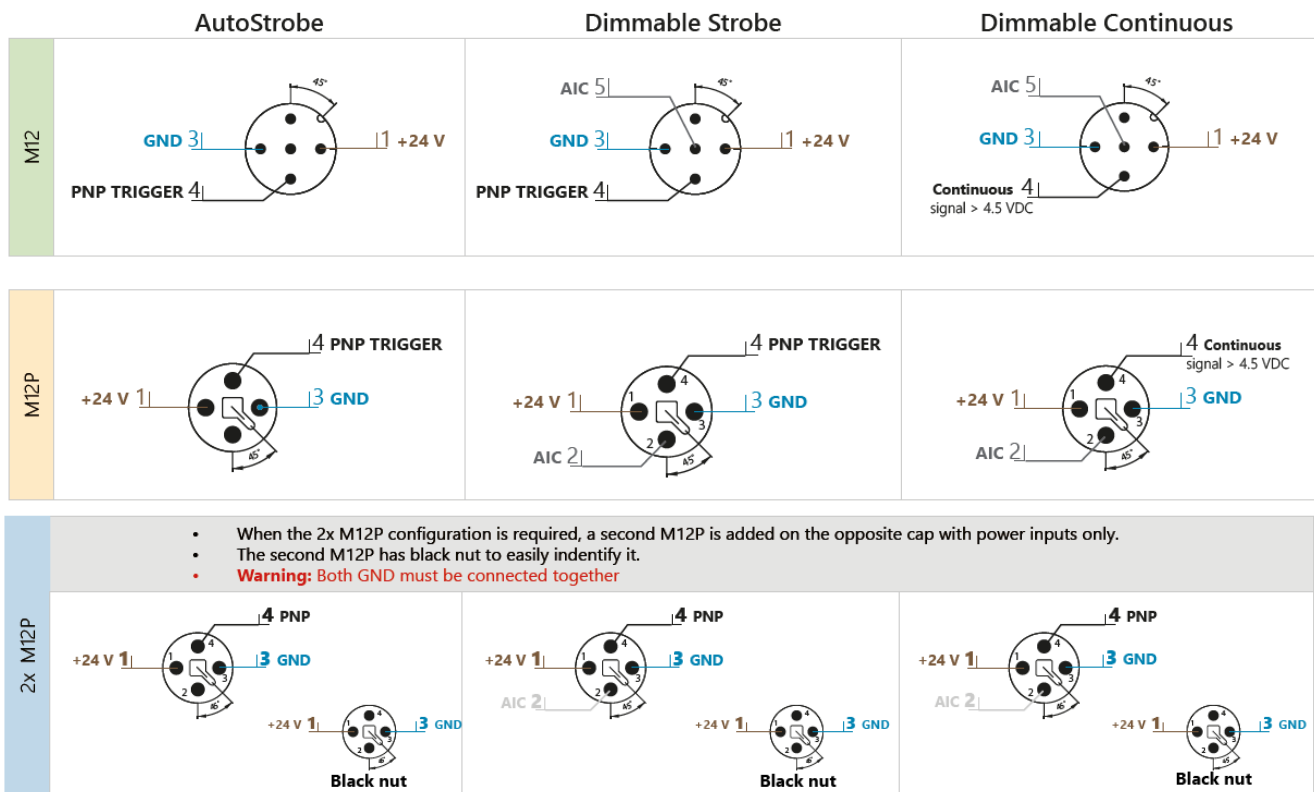## How to connect the EFFI-Flex2-IP67 ?

Depending on the size, the light comes with different connectors (refer to the table above).
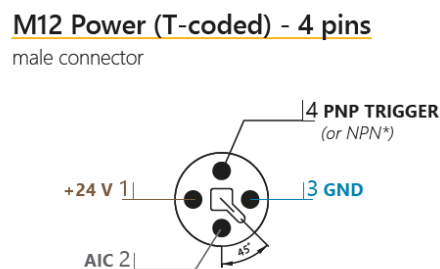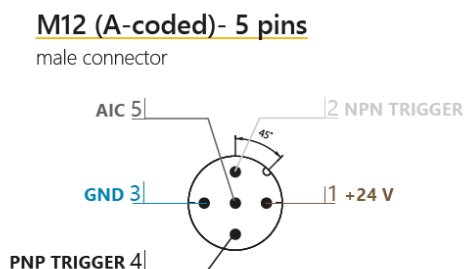
Notes:

- The EFFI-FLEX2-IP67 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.
- AIC pin can stay unplugged for Autostrobe mode, or tied to +24V for continuous mode at maximum intensity.
- (*) For light requiring M12P connector, the NPN trigger is optionnal. With the NPN option, the PNP trigger input is replaced by the NPN trigger input.

Layout example (PNP)

	AutoStrobe	Dimmable Strobe	Dimmable Continuous

M12

AutoStrobe:
GND 3| |1 +24 V
PNP TRIGGER 4|

Dimmable Strobe:
AIC 5|
GND 3| |1 +24 V
PNP TRIGGER 4|

Dimmable Continuous:
AIC 5|
GND 3| |1 +24 V
Continuous 4|
signal > 4.5 VDC

M12P

AutoStrobe:
|4 PNP TRIGGER
+24 V 1| |3 GND

Dimmable Strobe:
|4 PNP TRIGGER
+24 V 1| |3 GND
AIC 2|

Dimmable Continuous:
|4 Continuous
signal > 4.5 VDC
+24 V 1| |3 GND
AIC 2|

2x M12P

- When the 2x M12P configuration is required, a second M12P is added on the opposite cap with power inputs only.
- The second M12P has black nut to easily indentify it.
- **Warning:** Both GND must be connected together

AutoStrobe:
|4 PNP
+24 V 1| |3 GND
+24 V 1| |3 GND
Black nut

Dimmable Strobe:
|4 PNP
+24 V 1| |3 GND
AIC 2|
+24 V 1| |3 GND
Black nut

Dimmable Continuous:
|4 PNP
+24 V 1| |3 GND
AIC 2|
+24 V 1| |3 GND
Black nut

Analog Intensity Control (AIC)

- The output intensity can be adjusted from 20% to 100% by applying a signal from [2V-10V DC].
- If VAIC = [0V-1V DC] or if not connected, the EFFI-Flex2-IP67 is in AutoStrobe mode by default.

Trigger control (PNP)

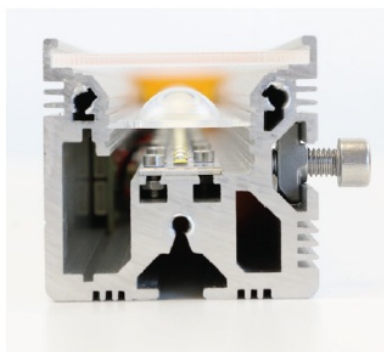| | Max. PNP voltage threshold (V) | | | | | | | | | | | | | |
| | Max. power consumption during overdrive in AutoStrobe mode | | | | | | | | | | | | | |
Cable length	20W	30W	40W	60W	80W	100W	120W	145W	170W	220W	270W	320W	370W	420W
2m	4.3	4.4	4.4	4.5	4.6	4.6	4.4	4.5	4.5	4.6	4.6	4.7	4.8	4.9
5m	4.5	4.5	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				

MECHANICAL CONSIDERATION

General

IP rating	IP67
Dimensions	54mm x 37.5mm 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

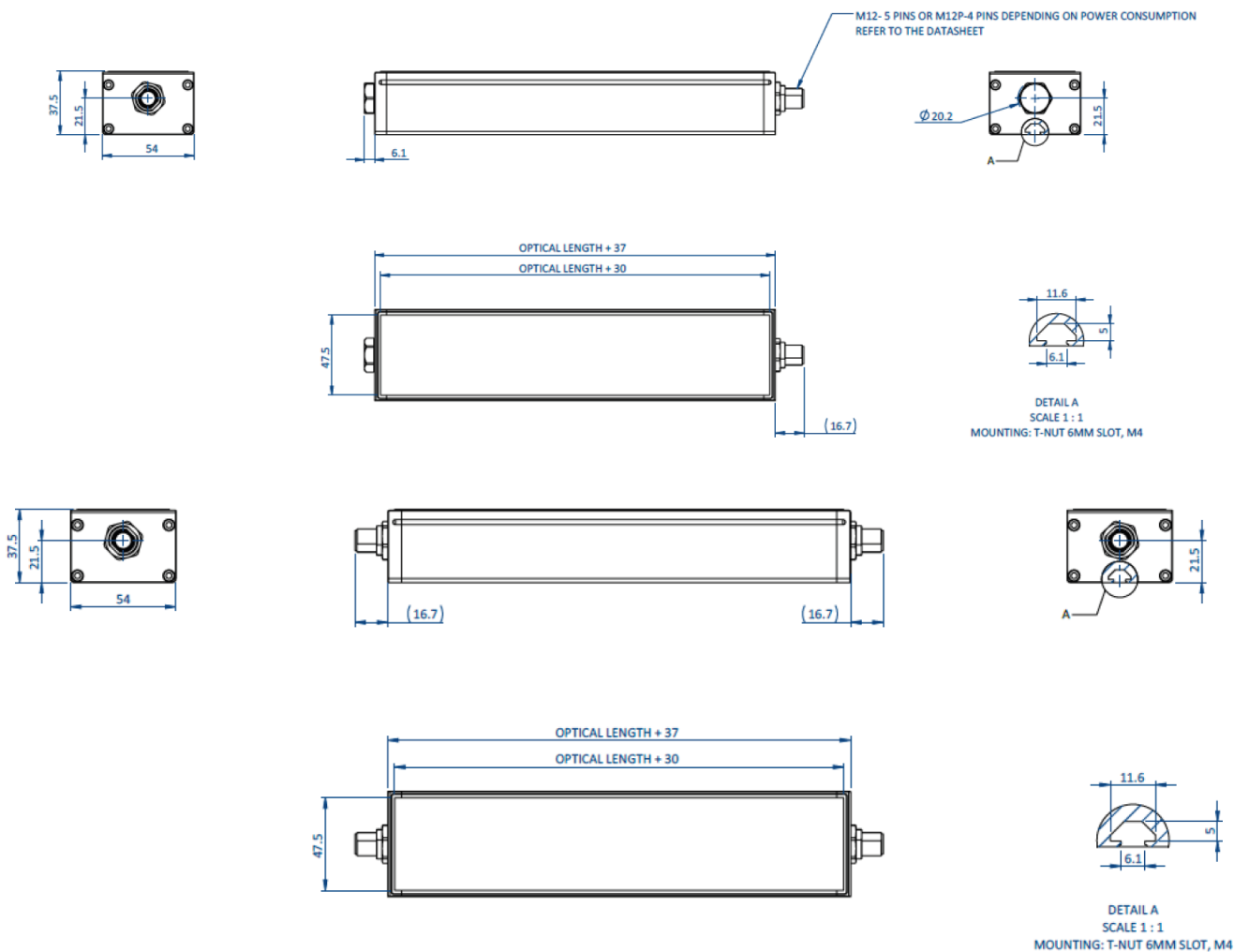EFFI-Flex2 is easily fixed to a frame with its T-NUT M6 nuts, see picture below:
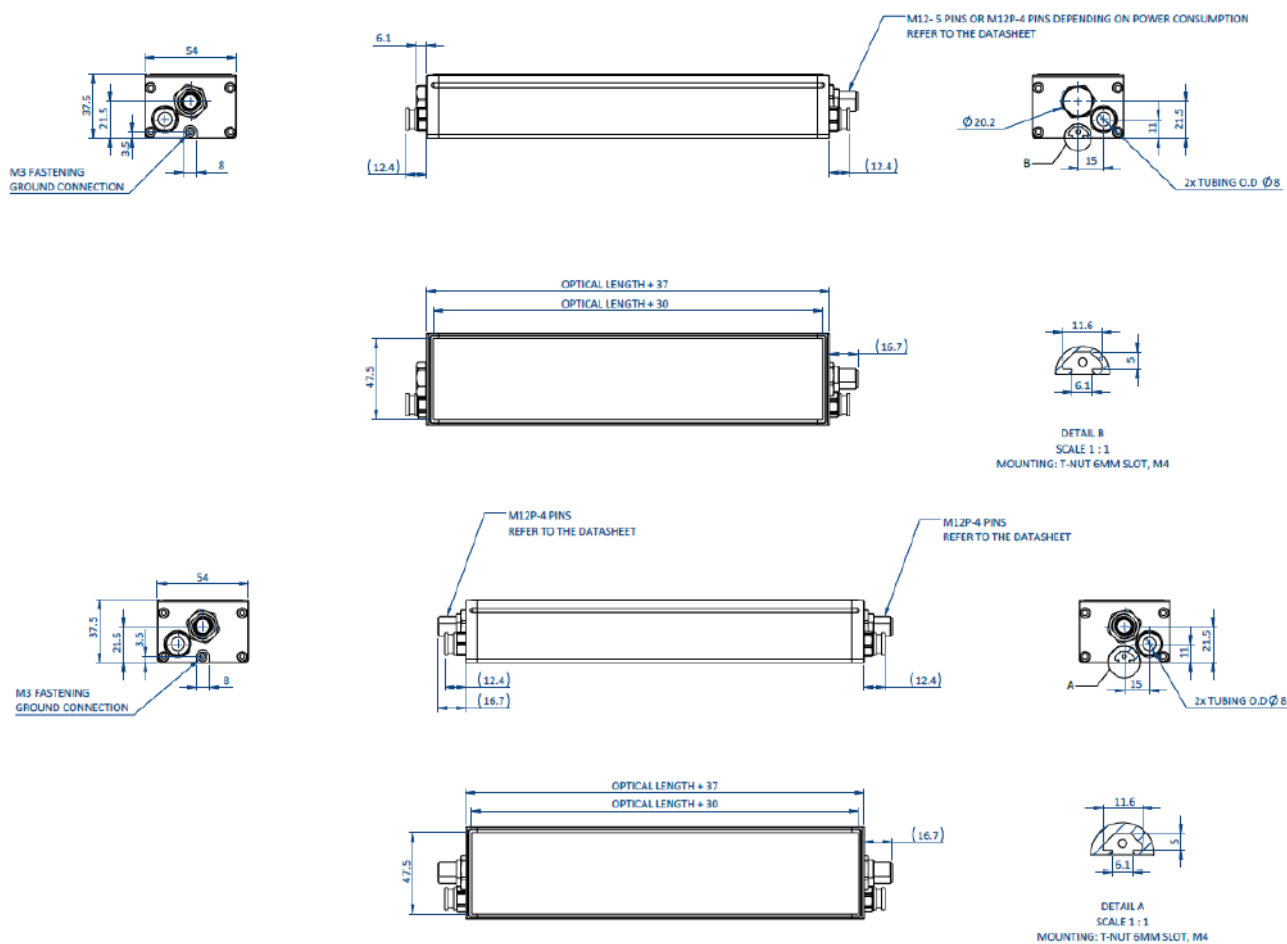

T-NUT on the side

T-NUT on the rear

Drawings for the standard version

M12- 5 PINS OR M12P-4 PINS DEPENDING ON POWER CONSUMPTION
REFER TO THE DATASHEET

37.5
21.5
54
6.1
Ø 20.2
21.5
A

OPTICAL LENGTH + 37
OPTICAL LENGTH + 30
47.5
(16.7)

11.6
5
6.1
DETAIL A
SCALE 1 : 1
MOUNTING: T-NUT 6MM SLOT, M4

37.5
21.5
54
(16.7)
(16.7)
21.5
A

OPTICAL LENGTH + 37
OPTICAL LENGTH + 30
47.5

11.6
5
6.1
DETAIL A
SCALE 1 : 1
MOUNTING: T-NUT 6MM SLOT, M4

Drawings for the WTR version

54
37.5
21.5
3.5
8
M3 FASTENING
GROUND CONNECTION

6.1
(12.4)

M12- 5 PINS OR M12P-4 PINS DEPENDING ON POWER CONSUMPTION
REFER TO THE DATASHEET
(12.4)

Ø 20.2
B
15
11
21.5
2x TUBING O.D Ø 8

OPTICAL LENGTH + 37
OPTICAL LENGTH + 30
47.5
(16.7)

11.6
5
6.1
DETAIL B
SCALE 1 : 1
MOUNTING: T-NUT 6MM SLOT, M4

54
37.5
21.5
3.5
8
M3 FASTENING
GROUND CONNECTION

M12P-4 PINS
REFER TO THE DATASHEET
(12.4)
(16.7)

M12P-4 PINS
REFER TO THE DATASHEET
(12.4)

A
15
11
21.5
2x TUBING O.D Ø 8

OPTICAL LENGTH + 37
OPTICAL LENGTH + 30
47.5
(16.7)

11.6
5
6.1
DETAIL A
SCALE 1 : 1
MOUNTING: T-NUT 6MM SLOT, M4

REGULATIONS & ENVIRONMENT

Regulations	CE – UKCA
Environmental directives	RoHS Directives (2011/65/EU, 2015/863/EU and China RoHS) – REACH Regulation – WEEE Regulation
Manufacturing country	Product made in France by Effilux

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. This regulation requires electronic information products which are manufactured or imported, and sold in China, to clearly disclose contents of the 6 restricted substances listed below.

Usage Deadline for Environmental Protection	Product names	Names and contents of hazardous substances					
		Lead and its compounds (Pb)	Mercury and its compounds (Hg)	Cadmium and its compounds (Cd)	Hexavalent chromium compounds (CR(VI))	PBB	PBDE
(10)	LED light, Control Unit, or Optional product	✖	◯	✖	◯	◯	◯

(This table is made in compliance with SJ$_b$ / T11364 regulations.)
O : Indicates that this toxic or hazardous substances contained in all the homogeneous materials for this part, according to GB/T26572 is within the limit requirement
X : Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to GB/T26572, is over the limit requirement
*Lead and cadmium are exempted in EU RoHS

Usage deadline for environmental protection
   The number used in this logo is based on « Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products » and related regulations. It shows the product usage duration in years of environmental protection. After finishing a product usage, the product needs to be re-used or discarded appropriately following local law and regulations, complying with safety and usage caution.

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 FLEX2-IP67 LED Light [pdf] User Manual
FLEX2-IP67, FLEX2-IP67 LED Light, LED Light, Light

References

- **User Manual**