



# MBJ Patternlight Illumination LED Barlights Machine User Manual

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**MBJ Patternlight Illumination LED Barlights Machine**



## Product Information

### Specifications

- Model: Patternlight Standard
- Mechanical Integration: 1x M8 and 3x M4 threaded holes
- Certifications: CE, RoHS
- Degree of protection: IP20
- Operating temperature: Indoor use only
- Humidity: 30% to 70%
- Electrical Connection: 5 pin M12x1 connector

### Product Usage Instructions

#### Mechanical Integration

The light is equipped with 1x M8 and 3x M4 threaded holes at one side. These holes can be used to fix the lighting to the specified position. To ensure a long operational lifetime of the light, additional heat transfer measures at the mounting positions are highly recommended.

#### Safety Notes

Before working with this unit, read the warning and application instructions carefully and completely before operating the device. Have the illuminators commissioned only in compliance with the specified protective measures. It is essential that you comply with the permissible ambient conditions. The lighting must be switched off before installation and/or maintenance. The device must not be used when a failure may cause personal injury.

#### Electrical Connection

The lighting is equipped with a 5 pin M12x1 connector.

**The pin configuration is as follows:**

Pin	Color	Function
1	brown	24 VDC LED (+)
2	white	Dim LED (+)
3	blue	Trigger LED (-)
4	black	Ground LED (-)
5	not used	not used

Pin 3 (Trigger) is an 'active high' input signal with 5...24 V = ON and 0..1 V = OFF, it is a high resistance current sink with 0.2 mA for 5 V and 5 mA for 24 V. Pin 2 (DIM) is used as brightness control and operation mode switch, it is a high resistance current sink with 0.2 mA for 5 V and 1 mA for 24 V. For connection, it is recommended to use the MBJ lighting cable with a maximum length of 10 m.

## FAQ

### 1. Q: What are the certifications for this product?

A: This product is CE and RoHS certified.

### 2. Q: Can this product be used outdoors?

A: No, this product is designed for indoor use only.

### 3. Q: What is the operating temperature range for this product?

A: The operating temperature range is not specified in the manual.

### 4. Q: How should I mount the lighting?

A: The lighting can be fixed to the specified position using the provided M8 and M4 threaded holes. It is recommended to implement additional heat transfer measures at the mounting positions to ensure a long operational lifetime of the light.

### 5. Q: What is the recommended maximum length for the lighting cable?

A: It is recommended to use the MBJ lighting cable with a maximum length of 10 m.

## Model Sizes in Series

The illumination is available in the following size

Pattern light Projector incl. 1 Standard Pattern (Pattern Choice1), w/o lens)

1. For Standard Patterns refer to [www.mbj-imaging.com](http://www.mbj-imaging.com), Custom Patterns possible.

## Possible LED Colors

LED	Abbr.1)	Peak Wavelength2)
White	-WT	5000 K, CRI70
Red	-RD	near 634 nm
Infrared	-IR	near 850 nm

1. Color option will be added to the model name after the size information.

PL-Projector-RD refers to an Patternlight with 634 nm red light.

2. Approximated value. The exact value also depends on LED temperature and LED current.

## Focal length selection of lens1)

		Projected Diameter in mm						
		68	100	150	220	330	470	680
Working Distance in mm	100	12 <sup>2)</sup>	8	6	5	3		
	150	16	12 <sup>2)</sup>	8	6	5	3	
	220	25	16	12 <sup>2)</sup>	8	6	5	4
	330	35	25	16	16	8	6	5
	470	50 <sup>2)</sup>	35	25	16	12 <sup>2)</sup>	8	6
	680		50 <sup>2)</sup>	35	25	16	12 <sup>2)</sup>	8
	1000			50 <sup>2)</sup>	35	25	16	12 <sup>2)</sup>
	1500				50 <sup>2)</sup>	50 <sup>2)</sup>	35	25

1. For guidance only, approximate values
2. Available lenses from MBJ: Wide = 12 mm, Narrow = 50 mm

## Safety Notes

Before working with this unit, read the warning and application instructions carefully and completely before operating the device. Have the illuminators commissioned only in compliance with the specified protective measures. It is essential that you comply with the permissible ambient conditions. The lighting must be switched off before installation and/or maintenance. The device must not be used when a failure may cause personal injury.



1. The device is designed for indoor use only.
2. Light – Due to the risk of irritation of or damage to the eyes or skin it is not recommended to look directly into the light source.
3. Heat – In case of insufficient heat dissipation or when running the light in flash mode with a too high duty cycle, the surface temperature may get hot. Do not touch the product during operation or immediately after it is turned off. Keep off flammable materials at any time and allow for sufficient heat dissipation.
4. Electricity – The housing is electrically isolated from the ground of the power supply. Operate only with the permissible current. Exceeding the permissible current can lead to the destruction of the device or to a significant shortening of the lifetime of the LEDs in the device.
5. Usage – Please prevent mechanical stress to the light surface during operation. This will lead to an inhomogeneous light emission.
6. Cleaning – The light emission surface has to be cleaned with a standard glass cleaner and a soft cleaning cloth. Do not use other material for cleaning as it will damage the device.

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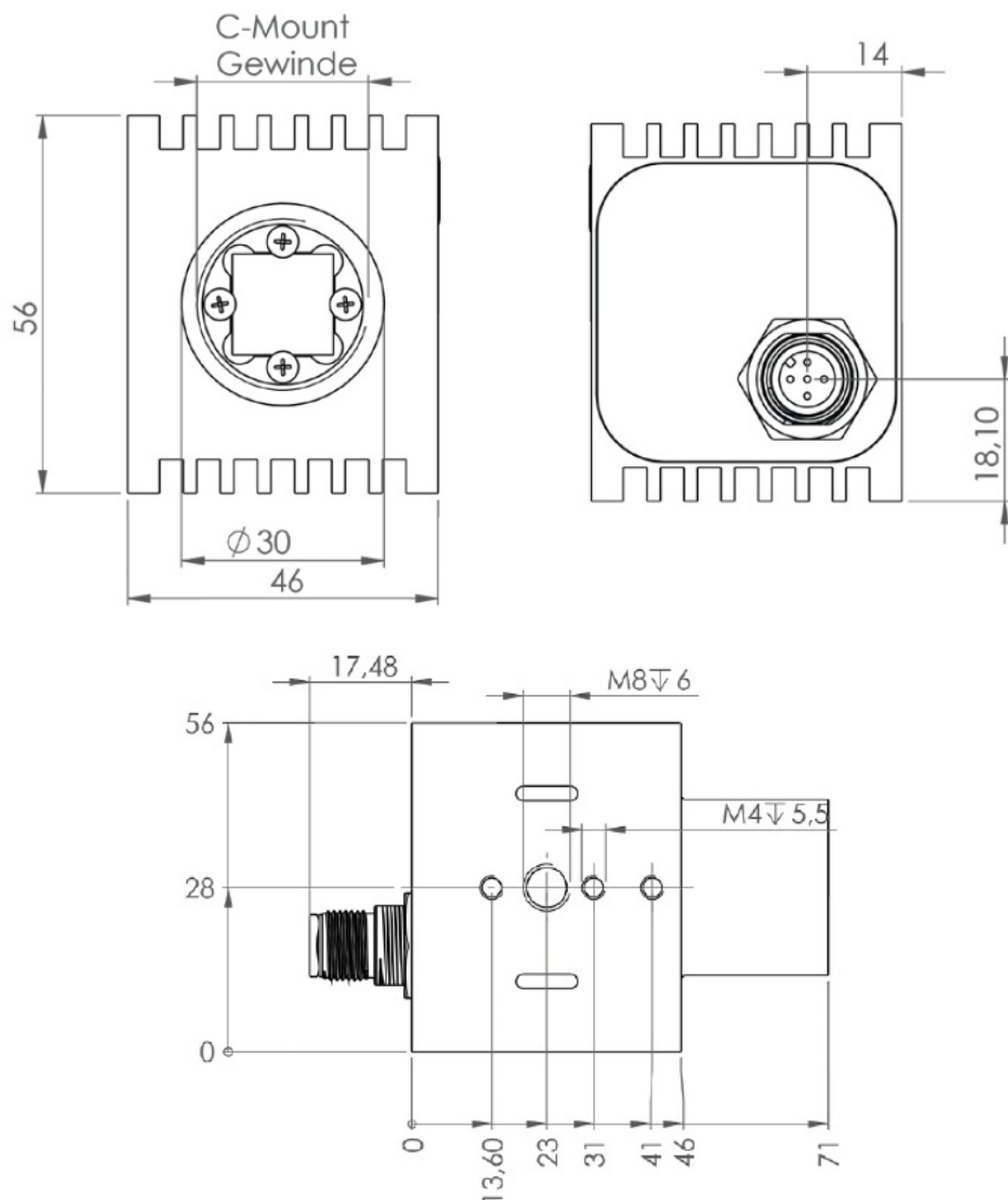
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- Website: [www.mbj-imaging.com](http://www.mbj-imaging.com)

## Mechanical Integration

The light is equipped with 1x M8 and 3x M4 threaded holes at one side. It can be used to fix the lighting to the specified position. To ensure a long operational lifetime of the light additional heat transfer measures at the mounting positions are highly recommended.

### Model Pattern light Standard

More 2D and 3D drawings can be found online: [www.mbj-imaging.com](http://www.mbj-imaging.com)

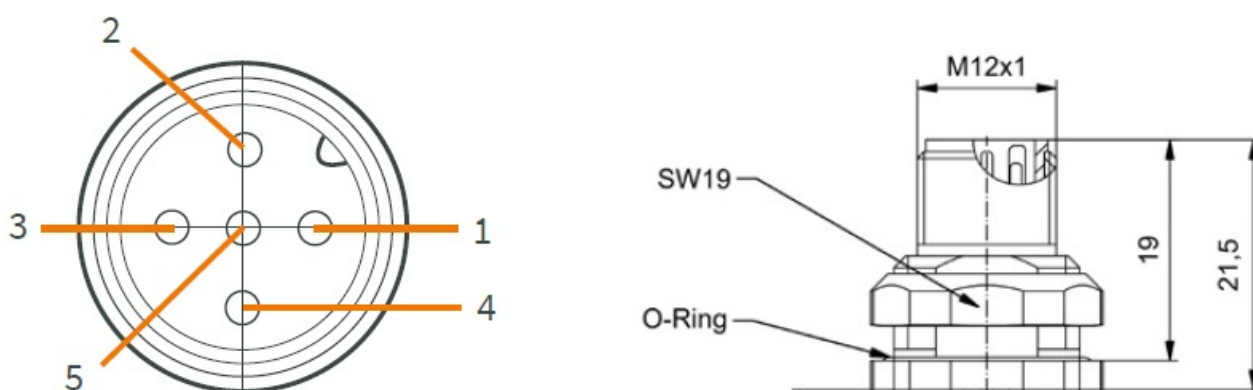


Specification	Patternlight
Operating temperature	10°C to 30°C / 45°C1)
Certifications	CE, RoHS
Degree of protection	IP20
Humidity	30 % to 70 %

1. Max. of 30°C is recommended for steady light operation w/o additional heat transfer measurements, for max. 45°C a thermal connection is mandatory. Max. of 45°C is also permissible for flash light operation with a max. 10 % duty cycle.

## Electrical Connection

The lighting is equipped with an 5 pin M12x1 connector.



Pin	Color 1)	Standard (-s)	Direct (-x) 2)
1	brown	24 VDC	LED (+)
2	white	Dim	LED (+)
3	blue	Trigger	LED (-)
4	black	Ground	LED (-)
5		not used	not used

1. wire color of MBJ lighting cable
2. connection to 24 VDC without external LED controller may destroy the unit

### Additional Information:

Pin3 (Trigger) is an 'active high' input signal with 5...24 V = ON and 0..1 V = OFF, it is a high resistance current sink with 0.2 mA for 5 V and 5 mA for 24 V. Pin2 (DIM) is used as brightness control and operation mode switch, it is a high resistance current sink with 0.2 mA for 5 V and 1 mA for 24 V. For connection it is recommended to use the MBJ lighting cable with a maximum length of 10 m.

### Integrated Controller (-s)

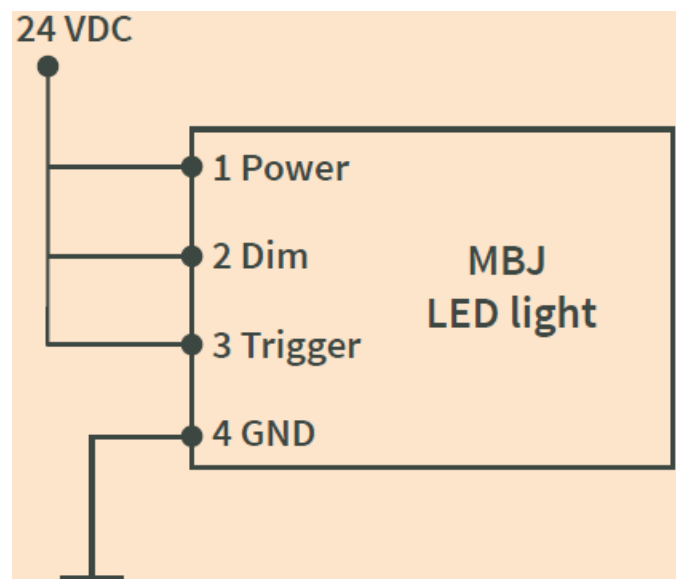
Supported operation modes with the integrated LED controller

Pin 2 (Dim)	Operation mode
24 V	steady light 1)
1...10 V	steady light with brightness control 2)
24 V	triggered light
GND	triggered flash light with max. 20 ms and up to 100 % more light intensity 3)

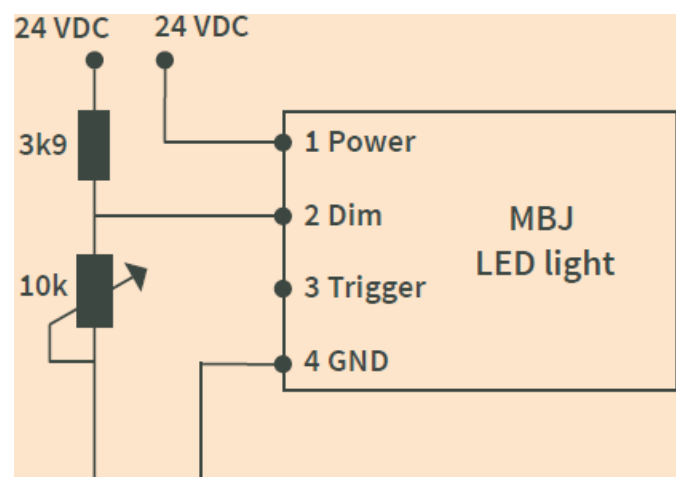
1. Pin 3 (Trigger) needs permanent 24 V to activate steady light mode
2. PWM with 3.8 kHz clock is used, recommended minimal camera exposure is 5 ms
3. Latency between trigger and LED light ON is max. 30µs, max. recommended clock speed is 1 kHz max.  
recommended duty cycle is 25 %min. recommended flash time is 100 µs

## Application Samples for (-s) controller

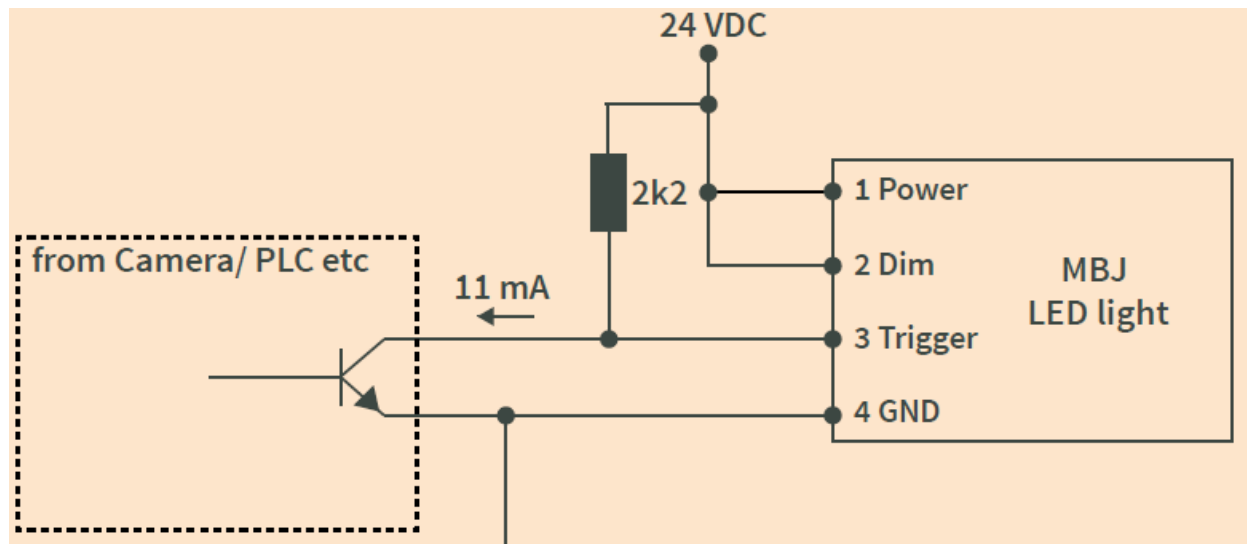
### Steady light



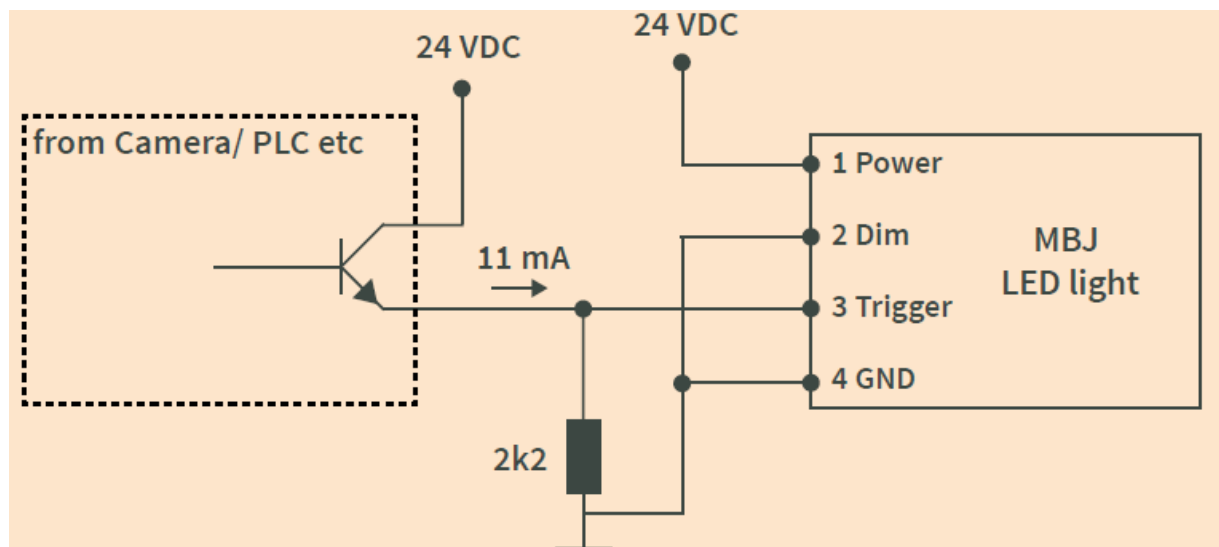
### Steady light with brightness control



**Triggered light with NPN sinking output (inverted strobe signal, open collector)**



**Flashed light with PNP sourcing**





Specification	PL-Standard	
<b>Optical parameter</b>		
Pattern size on mirror	The active area for the pattern is 11 mm OD	
Suitable lenses	The Pattern light is compatible to any C-Mount lens; for best results the lens should be suitable for sensor size min. 2/3" (11 mm diagonal)	
Light emission	Spotlight with patterned light emission	
Recommended use	3D/ size analysis of objects, alignment guidance, quality control	
Recommended light working distance	100 mm to 1500 mm, depending on choice of lens	
<b>Electrical parameter</b>		
Available interfaces	-s with integrated LED Controller and 4 operation modes;	-x with direct LED access (external LED control is required)
Uin for -s Version	24 V DC +/- 5%	
ULed(+) range for -x version1)	WT: 12.0 ... 13.5 VDC; RD: 9.5 ... 11 VDC; IR: 12..13.5 VDC	
<b>Typical Power (-s version)</b>		
Steady light operation (white / red / IR)	9 W / 6 W / 9 W	
During ON time at flashed light operation2)	20 W	
<b>Recommended LED current (-x version)</b>		
Steady light (100% duty cycle)	600 mA	
Flash light (50% duty cycle, < 500 ms pulse)	900 mA	
Flash light (25% duty cycle, < 50 ms pulse)	1200 mA	
Flash light (10% duty cycle, < 5 ms pulse)	1500 mA	
<b>General parameters</b>		
Dimension (H x W x D)	56 mm x 46 mm x 71 mm	
Weight	250 g	
Material	Anodized aluminum housing with C-mount thread to connect lens	
Connector	M12x1 socket, 5 pin, male (for pinning details refer to chart "Electrical Connection")	
Accessories	For cable, mounts and LED controller please check <a href="http://www.mbj-imaging.com">www.mbj-imaging.com</a>	

1. Lower voltage value refers to steady light, higher voltage value refers to flash light, please see max. allowed

current in the rows below.

2. Triggered flash light with max. 20ms and up to 100% more light intensity, calculated for white.

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## Documents / Resources

	<a href="#">MBJ Patternlight Illumination LED Barlights Machine</a> [pdf] User Manual Standard, Patternlight Illumination LED Barlights Machine, Patternlight, Illumination LED Barlight s Machine, LED Barlights Machine, Barlights Machine, Machine
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## References

- [B imaging.com is for sale | www.brandforce.com](#)
- [MBJ - LED Beleuchtungen für industrielle Bildverarbeitung](#)
- [User Manual](#)

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