

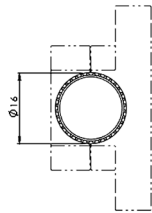
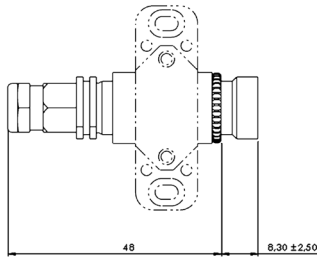
## Mechanical Integration

We recommend using the Minispot mounting set for installation. This allows fine adjustment of the tilt angle and ensures optimum thermal connection.  
Please note, that for the Power Minispot PSL a good thermal connection is mandatory.

### Example: Model SSL narrow



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



Specification	Minispot
Operating temperature	10°C to 30°C / 45°C <sup>1)</sup>
Certifications	CE, RoHS
Degree of protection	IP20
Humidity	30% to 70%
Accessories	For cable, mounts and LED controller please check <a href="http://www.mbj-imaging.com">www.mbj-imaging.com</a>

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 permissible for flash light operation with a max. 10% duty cycle.

## Safety Notes

Before working with this unit, read the warning and application instructions carefully and completely before operating the device.



1. The device is designed for indoor use only.
2. **Light** – Due to the risk of flash burn of the eyes it is not recommended to look directly into the light source. The lighting must be switched off before installation and/or maintenance. The device must not be used when a failure may cause a personal injury.
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 exceed 60 °C. Keep off flammable materials at any time.
4. **Electricity** – The housing is electrically isolated from the ground of the power supply. Exceeding the permissible input voltage  $U_{in}$  or  $U_{LED(+)}$  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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## Operating Manual Technical Data Minispot



### Model Sizes in Series

The light is available in the following versions <sup>1)</sup>	
SSL narrow	SSL wide
Power PSL narrow	Power PSL wide

1) Version refers to the beam width and power of the Minispot.

### Possible LED Colors

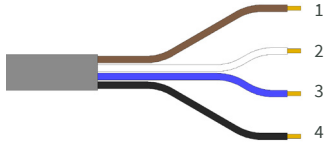
LED	Abbr. <sup>1)</sup>	Peak Wavelength <sup>2)</sup>
White	-WT	6020K, CRI80

1) Color option will be added to the model name after the size information. Minispot SSL-Narrow-WT-s is a Spotlight with 6020 K White light.

2) This is an approximated value. The exact value also depends on LED temperature and LED current.

## Electrical Connection

The lighting is equipped with an 4 pin open cable ends



Pin	Color <sup>1)</sup>	Standard (-s)	Direct (-x) <sup>2)</sup>
1	brown	24 VDC	LED (+)
2	white	Dim	LED (+)
3	blue	Trigger	LED (-)
4	black	Ground	LED (-)

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...24V=ON and 0...1V=OFF, it is a high resistance current sink with 0.2mA for 5V and 5mA for 24V

Pin2 (DIM) is used as brightness control and operation mode switch, it is a high resistance current sink with 0.2mA for 5V and 1mA for 24V.

For the connection it is recommended to use the MBJ lighting cable with a maximum length of 10m.

## Integrated Controller (-s)

Supported operation modes with the integrated LED controller

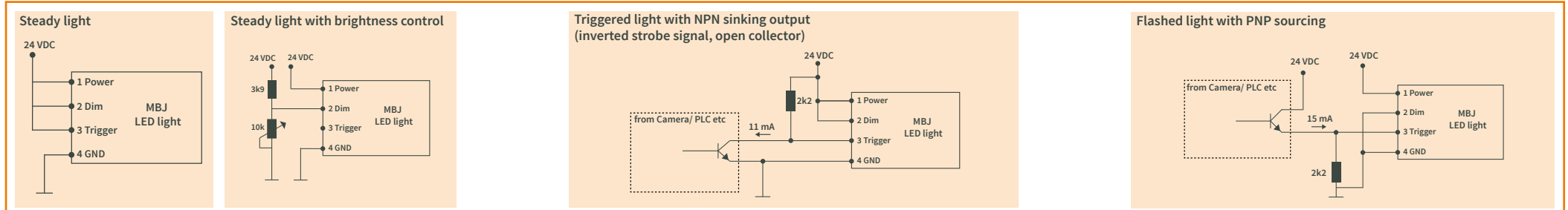
Pin 2 (Dim)	Operation mode
24 V	steady light <sup>1)</sup>
1...10 V	steady light with brightness control <sup>2)</sup>
24 V	triggered light
GND	triggered flash light with max. 20 ms and up-to 100% more light intensity <sup>3)</sup>

1) Pin 3 (Trigger) needs permanent 24V 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. 30 µs, maximum recommended clock speed is 1 kHz maximum recommended duty cycle is 25 % minimum recommended flash time is 100 µs<sup>7</sup>

## Application Samples for (-s) controller



Specification	Standard		Power	
	SSL narrow	SSL wide	PSL narrow	PSL wide
<b>Optical parameter</b>				
Luminous area (Ø)	7 mm	7 mm	7 mm	7 mm
Optic	16 mm	6 mm	16 mm	6 mm
	(compatible with any S-mount optics)			
Light emission	Spotlight with high power LED and adjustable S-mount optic			
Recommended use	commonly used to illuminate very small objects or used in tight spaces			
Recommended light working distance	10 mm - 400 mm	1 mm - 150 mm	10 mm - 500 mm	1 mm - 200 mm
<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)			
U <sub>in</sub> for -s Version	24V DC +/- 5 %			
U <sub>LED(+)</sub> range for -x version <sup>2)</sup>	WT: 2.8 ... 3.4 VDC			
<b>Typical Power (-s version)</b>				
Steady light operation	1 W	1 W	2 W	2 W
During ON time at flashed light operation <sup>3)</sup>	3 W	3 W	5 W	5 W
<b>Recommended LED current (-x version)</b>				
Steady light (100% duty cycle)	only -s version		600 mA	600 mA
Flash light (50% duty cycle, < 500 ms pulse)	-		900 mA	900 mA
Flash light (25% duty cycle, < 50 ms pulse)	-		1200 mA	1200 mA
Flash light (10% duty cycle, < 5 ms pulse)	-		1500 mA	1500 mA
<b>General parameter</b>				
Dimension (H x W x D)	16 mm x 16 mm x 56,3 +/- 2,5 mm			
Weight	90 g <sup>4)</sup>			
Material	Anodized aluminum housing			
Connector	open cable, 4 pin (for pinning details refer to chart "Electrical Connection")			

1) Values are approximate with a +/- 7 % tolerance.

2) Lower voltage value refers to steady light, higher voltage value refers to flash light, please see max. allowed current in the rows below.

3) Triggered flash light with max. 20 ms and up to 100 % more light intensity, calculated for White.

4) w/o cable & cable integrated controller