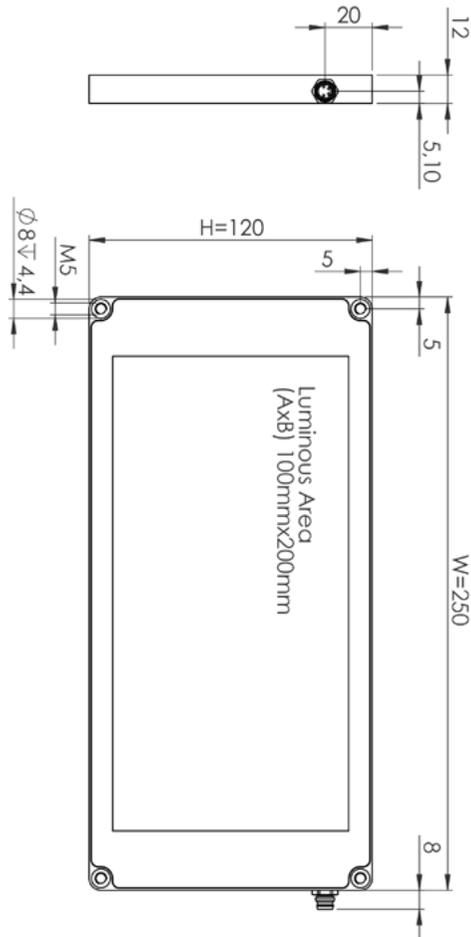


## Mechanical Integration

The light is equipped with 4 combined mounting positions of M5 threaded holes and M4 through holes. It can be used to fix the lighting to the specified position. To secure a long live time additional heat transfer measurements at the holding positions is highly recommended.

Example: Model DBL-1020



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

## 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 inhomogenous 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.

Manual DBL BackLight Series: Revision 04 - 20 January 2021. INDD File Rev07.

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Operating Manual  
 Technical Data

## Back Light Series



### Model Sizes in Series

The illumination is available in the following sizes <sup>1)</sup>		
DBL-0510	DBL-1010	DBL-1020
DBL-2020	DBL-2030	

1) size definition: DBL-0510 refers to a light field of 50mm x 100mm

### Possible LED Colors

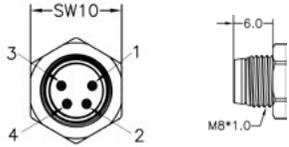
LED	Abbr. <sup>1)</sup>	Peak Wavelength <sup>2)</sup>
White	-WT	5000K, CRI80
Red	-RD	near 625nm
Infrared	-IR	near 850nm
Green	-GN	near 525nm
Blue	-BE	near 465nm
Yellow	-YE	near 580nm

1) Color option will be added to the model name after the size information. DBL-1010-IR refers to a back light with 850nm infrared 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 M8x1 connector.



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 (-)

- wire color of MBJ lighting cable
- connection to 24VDC 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.

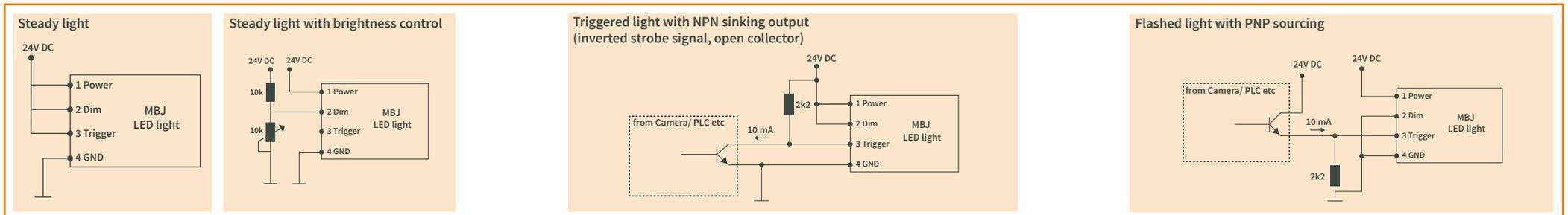
## Integrated Controller (-s)

Supported operation modes with the integrated LED controller

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

- Pin 3 (Trigger) needs permanent 24V to activate steady light mode
- PWM with 3.8kHz clock is used, recommended minimal camera exposure is 5ms
- latency between trigger and LED light ON is about 20...30µs, the maximum recommended clock speed is 1 kHz, the maximum recommended duty cycle is 25% and the minimum recommended flash time is 100µs

## Application Samples for (-s) controller



Specification	DBL-0510	DBL-1010	DBL-1020	DBL-2020	DBL-2030
<b>Optical parameter</b>					
Luminous area (A x B)	50mmx100mm	100mm x 100mm	100mm x 200mm	200mm x 200mm	200mm x 300mm
Light emission	rectangular light field with side fired LED, diffuse emission and homogeneity >90%				
Recommended use	commonly used as backlight, placed closely behind the object, e.g. for contour measurement				
Illuminance of white LEDs at 0mm distance <sup>1)</sup>	71klux	86klux	77klux	64klux	43klux
<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 +/- 10%				
U <sub>LED(+)</sub> range for -x version <sup>2)</sup>	WT / BE / YE: 17 ... 20 VDC; GN: 20 ... 23 VDC; RD: 12 ... 15 VDC; IR: 9 ... 12 VDC				
<b>Typical Power (-s version)</b>					
Steady light operation	6W	11W	16W	22W	28W
During ON time at flashed light operation	15W	30W	44W	44W	56W
<b>Recommended LED current (-x version)</b>					
Steady light (100% duty cycle)	300mA	600mA	900mA	1200mA	1500mA
Flash light (50% duty cycle, 500ms pulse)	600mA	1200mA	1800mA	2400mA	3000mA
Flash light (25% duty cycle, 50ms pulse)	900mA	1800mA	2700mA	3600mA	4500mA
<b>General parameter</b>					
Dimension (H x W x D)	100mm x 120mm x 12mm	120mm x 150mm x 12mm	120mm x 250mm x 12mm	220mm x 250mm x 12mm	220mm x 350mm x 12mm
Weight	250g	380g	600g	1100g	1600g
Material	Anodized aluminum housing with PMMA light cover				
Connector	M8x1 socket, 4 pin, male (pinning details on the next page)				
Operating temperature	10°C to 30°C				
Certifications	CE, RoHS				
Degree of protection	IP54				
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>				

- Values are approximate with +/- 7% tolerance
- Lower voltage value refers to steady light, higher voltage value refers to flash light, please see max. allowed current in the row below