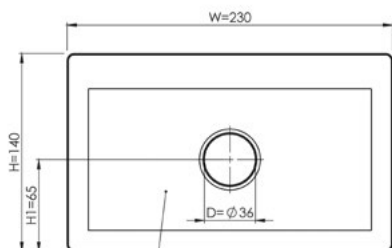


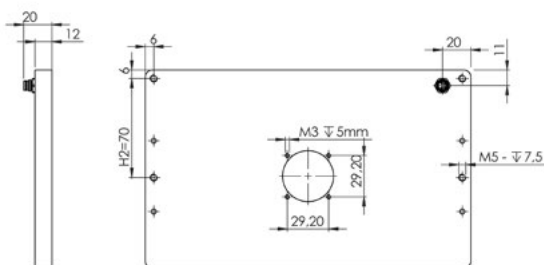
## Mechanical Integration

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 DTL-1020



Luminous Area  
(AxB) 100mmx200mm



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 DTL TopLight Series: Revision 03 - 24 January 2021. INDD File Rev07.

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Operating Manual  
Technical Data

## Top Light Series



### Model Sizes in Series

The illumination is available in the following sizes <sup>1)</sup>

DTL-0510	DTL-1010	DTL-1020
DTL-2020	DTL-2030	

1) size definition: DTL-1010 refers to a light field of 100mm x 100mm

### Possible LED Colors

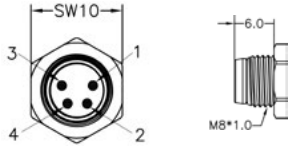
LED	Abbr. <sup>1)</sup>	Peak Wavelength <sup>2)</sup>
White	-WT	5000K, CRI80
Red	-RD	near 625nm
Infrared	-IR	near 850nm
Green	-GN	near 525nm
Blue	-BE	near 465nm
Yellow	-YE	near 580nm

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 (-)

1) wire color of MBJ lighting cable

2) 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>

1) Pin 3 (Trigger) needs permanent 24V to activate steady light mode

2) PWM with 3.8kHz clock is used, recommended minimal camera exposure is 5ms

3) 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

Specification	DTL-0510	DTL-1010	DTL-1020	DTL-2020	DTL-2030
<b>Optical parameter</b>					
Luminous area (A x B)	50mm x 100mm	100mm x 100mm	100mm x 200mm	200mm x 200mm	200mm x 300mm
Lens hole (D=diameter)	36mm	36mm	36mm	45mm	45mm
Light emission	rectangular light field with center lens hole and side fired LED, diffuse emission				
Recommended use	commonly used as incident light for brightfield application, placed around the MV camera, e.g. for for slightly reflective objects				
Luminous Flux of white LEDs [lumen] <sup>1)</sup>	520lm	1050lm	1570lm	2090lm	2610lm
Radiant Power of red LEDs [mW] <sup>1)</sup>	1540mW	3080mW	4610mW	6150mW	7690mW
Radiant Power of IR LEDs [mW] <sup>1)</sup>	740mW	1480mW	2220mW	2960mW	3700mW
<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	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)	90mm x 130mm x 12mm	140mm x 130mm x 12mm	140mm x 230mm x 12mm	240mm x 230mm x 12mm	240mm x 330mm x 12mm
Lens hole diameter [D]	36mm	36mm	36mm	45mm	45mm
Weight	250g	360g	660g	1150g	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>				

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 row below

## Application Samples for (-s) controller

