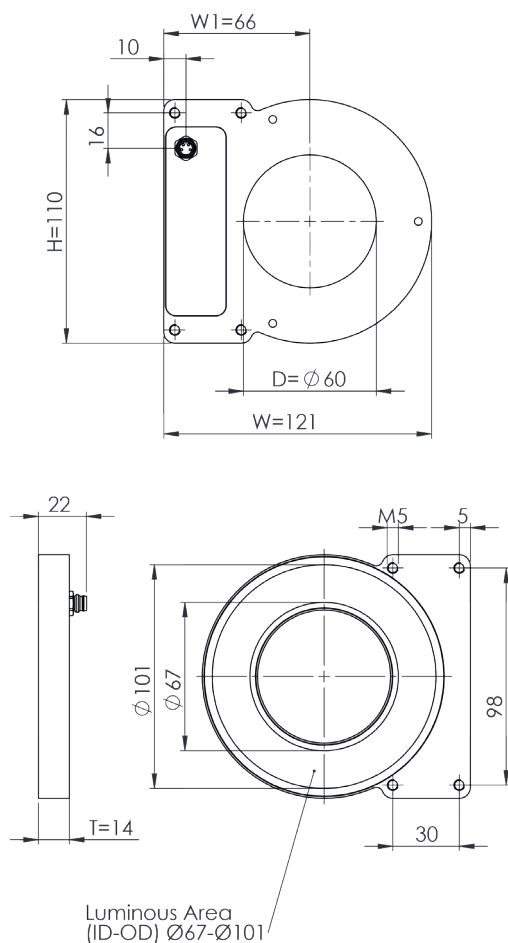


Mechanical Integration

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 position is highly recommended.

Example: Model SRL-10



More 2D and 3D drawings can be found online:
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 Ringlight SRL Series: Revision 04 - 28 April 2022

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Operating Manual
 Technical Data

Ringlight Series



Model Sizes in Series

The illumination is available in the following sizes ¹⁾

| SRL-04 | SRL-07 | SRL-10 | SRL-12 |
|--------|--------|--------|--------|
|--------|--------|--------|--------|

¹⁾ size definition refers to the center light field diameter

Possible LED Colors

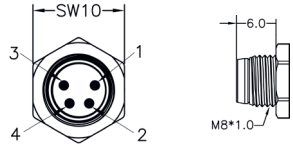
| LED | Abbr. ¹⁾ | Peak Wavelength ²⁾ |
|----------|---------------------|-------------------------------|
| White | -WT | 5000K, CRI80 |
| Red | -RD | near 625nm |
| Infrared | -IR | near 850nm |
| Green | -GN | near 525nm |
| Blue | -BE | near 465nm |
| Yellow | -YE | near 580nm |

¹⁾ Color option will be added to the model name after the size information. Ringlight SRL-07-IR refers to a ringlight 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 ¹⁾ | Standard (-s) | Direct (-x) ²⁾ |
|-----|---------------------|---------------|---------------------------|
| 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:

Pin 3 (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

Pin 2 (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.

SRL-04: due to the small size of this ring light the -s controller is integrated into the cable (cable controller).

Integrated Controller (-s)

Supported operation modes with the integrated LED controller

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

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.

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 | SRL-04 | SRL-07 | SRL-10 | SRL-12 |
|---|--|----------------------|----------------------|----------------------|
| Optical parameter | | | | |
| Luminous area (ID-OD) | 36mm - 52mm | 53mm - 72mm | 67mm-101mm | 87mm - 121mm |
| Light emission | Ring shaped light field with direct fired LED, slightly diffuse emission | | | |
| Recommended use | Commonly used as incident light for brightfield application, placed around the MV camera, e.g. for OCR or print inspection | | | |
| Luminous Flux of white LEDs ¹⁾ | 460lm | 920lm | 1380lm | 1840lm |
| Radiant Power of red LEDs ¹⁾ | 1350mW | 2700mW | 4060mW | 5410mW |
| Radiant Power of IR LEDs ¹⁾ | 650mW | 1300mW | 1950mW | 2600mW |
| Electrical parameter | | | | |
| 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 +/- 5% | | | |
| U _{LED(+)} range for -x version ²⁾ | WT / BE / YE: 17 ... 20 VDC; GN: 20 ... 23 VDC; RD: 12 ... 15 VDC; IR: 9 ... 12 VDC | | | |
| Typical Power (-s version) | | | | |
| Steady light operation (white / red / IR) ³⁾ | 3W / 2W / 3W | 6W / 5W / 5W | 9W / 7W / 7W | 11W / 9W / 9W |
| During ON time at flashed light operation ⁴⁾ | 8W | 15W | 23W | 25W |
| Recommended LED current (-x version) | | | | |
| Steady light (100% duty cycle) | 150mA (225mA for IR) | 300mA (450mA for IR) | 450mA (675mA for IR) | 600mA (900mA for IR) |
| Flash light (50% duty cycle, 500ms pulse) | 300mA | 600mA | 900mA | 1200mA |
| Flash light (25% duty cycle, 50ms pulse) | 450mA | 900mA | 1350mA | 1800mA |
| General parameter | | | | |
| Dimension (H x W x D) | 60mm x 60mm x 12mm | 80mm x 92mm x 12mm | 110mm x 121mm x 14mm | 130mm x 141mm x 14mm |
| Lens hole diameter [D] | 34mm | 45mm | 60mm | 80mm |
| Weight | 60g ³⁾ | 120g | 205g | 300g |
| Material | Anodized aluminum housing with PMMA light cover | | | |
| Connector | M8x1 socket, 4 pin, male (for pinning details refer to chart "Electrical Connection") | | | |
| Operating temperature | 10°C to 30°C | | | |
| Certifications | CE, RoHS | | | |
| Degree of protection | IP54 | | | |
| Humidity | 30% to 70% | | | |
| Recommended light working distance | 50mm-150mm | 75mm-200mm | 100mm-250mm | 150mm-300mm |
| Accessories | For cable, mounts and LED controller please check www.mbj-imaging.com | | | |

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.

3) Power for Yellow/Blue is comparable to White, Power for Green is approx. 1,2 times higher than White.

4) Triggered flash light with max. 20ms and up to 100% more light intensity.

5) Without cable controller.



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