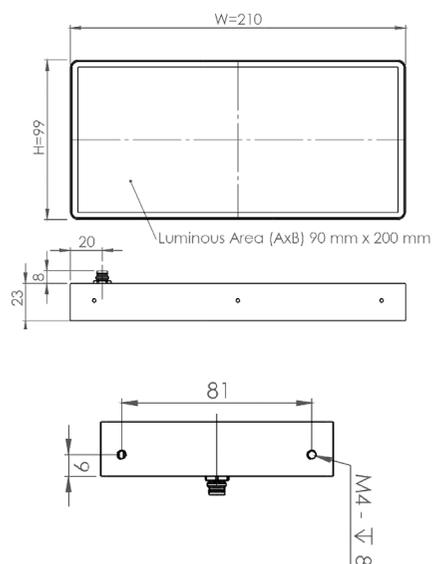


Mechanical Integration

The light is equipped with several combined mounting positions of M4 threaded holes. It can be used to fix the lighting to the specified position. In addition M2.5 threaded holes are provided at the two long sides to mount the foil and filter holder set. To secure a long lifetime additional heat transfer measurements at the holding positions are highly recommended.

Example: Model SAL-0920

More 2D and 3D drawings can be found online:
www.mbj-imaging.com



Specification	Arealight Series
Operating temperature	10°C to 30°C / 45°C ¹⁾
Certifications	CE, RoHS
Degree of protection	IP54 or IP67 ²⁾
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.
2) MBJ LED lights are protected against the ingress of solids and water in accordance with the selected protection class and applicable standards. Permanent protection against liquids containing solvents, such as cleaning agents, machine emulsions or other lubricants, cannot be guaranteed. IP is only valid with a connected cable (MBJ cable recommended).

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.

03201.01 Manual MBJ Arealight Series, August 2023

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Operating Manual Technical Data

Arealight Series



Model Sizes in Series

The light is available in the following sizes ¹⁾		
SAL-0910	SAL-0920	SAL-0930

1) Size definition: Arealight SAL-0920 refers to a luminous area of 90 mm x 200 mm

Possible LED Colors

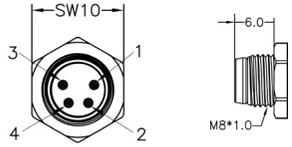
LED	Abbr. ¹⁾	Peak Wavelength ²⁾
White	-WT	5000 K, min. CRI80
Red	-RD	near 625 nm
Infrared	-IR	near 850 nm
Green	-GN	near 525 nm
Blue	-BE	near 465 nm
Yellow	-YE	near 580 nm

1) Color option will be added to the model name after the size information. SAL-0920-RD refers to an arealight with 625 nm red 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 0.2 mA for 5V and 5 mA for 24V

Pin 2 (DIM) is used as brightness control and operation mode switch, it is a high resistance current sink with 0.2 mA for 5V and 1 mA for 24V.

For the 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

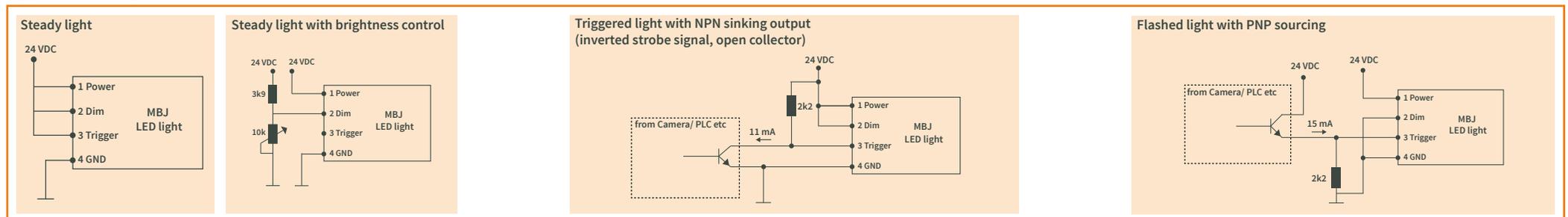
Pin 2 (Dim)	Operation mode
24V	steady light ¹⁾
1...10V	steady light with brightness control ²⁾
24V	triggered light
GND	triggered flash light with max. 20 ms and up-to 100% more light intensity ³⁾

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 about max. 30 μs, the maximum recommended clock speed is 1 kHz, the maximum recommended duty cycle is 25% and the minimum recommended flash time is 100 μs.

Application Samples for (-s) controller



Specification	SAL-0910 / SAL-0910-IP	SAL-0920 / SAL-0920-IP	SAL-0930 / SAL-0930-IP
Optical parameter			
Luminous area (A x B) or (ID ² /OD)	90 mm x 100 mm	90 mm x 200 mm	90 mm x 300 mm
Light emission	Areal, rectangular light field with direct light emission		
Recommended use	Commonly used for brightfield applications, large objects or need for bright areal illumination, e.g. print inspection. Different lighting angles highlight varied surface characteristics.		
Recommended light working distance	10 mm - 400 mm	10 mm - 550 mm	10 mm - 700 mm
Electrical parameter			
Available interfaces	-s with integrated LED Controller and 4 operation modes; -x with direct LED access (external LED control is required)		
U _{in} for -s Version	24 VDC +/- 5 %		
ULed(+) 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⁾	17 W / 13 W / 14 W	34 W / 26 W / 42 W	51 W / 39 W / 42 W
During ON time at flashed light operation ⁴⁾	46 W	92 W	112 W
Recommended LED current (-x version)			
Steady light (100% duty cycle)	900 mA (1350 mA for IR)	1800 mA (2700 mA for IR)	2700 mA (4050 mA for IR)
Flash light (50% duty cycle, < 500 ms pulse)	1800 mA (1350 mA for IR)	3600 mA (2700 mA for IR)	5400 mA (4050 mA for IR)
Flash light (25% duty cycle, < 50 ms pulse)	2700 mA (1350 mA for IR)	5400 mA (2700 mA for IR)	8100 mA (4050 mA for IR)
Flash light (10% duty cycle, < 5 ms pulse)	3600 mA (2700 mA for IR)	7200 mA (5400 mA for IR)	10800 mA (8100 mA for IR)
General parameter			
Dimension (H x W x D)	99 mm x 110 mm x 23 mm	99 mm x 210 mm x 23 mm	99 mm x 310 mm x 23 mm
Weight	370 g	760 g	1155 g
Material	Anodized aluminum housing with PMMA light cover		
Connector	M8x1 socket, 4 pin, male (for pinning details refer to chart "Electrical Connection")		
Accessories	For cable, foil holder brackets, light manipulation foils and external 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 Blue / Yellow is comparable to White, Power for Green is approx. 1,2 times higher

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