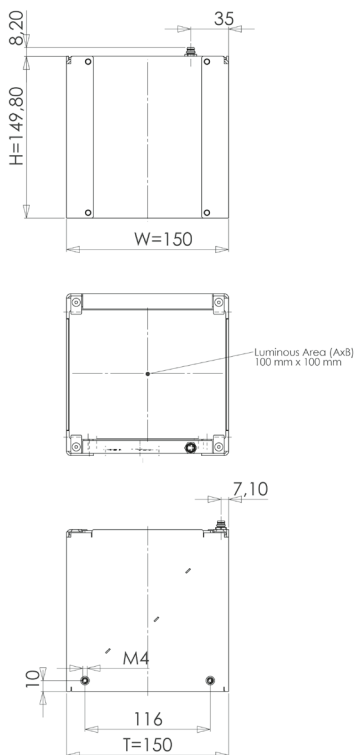


Mechanical Integration

The light is equipped with M4 threaded holes at the left and right side. It can be used to fix the lighting to the specified position. To ensure a long operational lifetime of the light additional heat transfer measures at the mounting positions are highly recommended.

Example: Model COX-1010

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



Specification	Coaxiallight Series
Operating temperature	10°C to 30°C
Certifications	CE, RoHS
Degree of protection	IP20
Humidity	30% to 70%

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.

03205.03 Manual MBJ Coaxiallight COX-Series, August 2023

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Operating Manual Technical Data

Coaxiallight Series



Model Sizes in Series

The light is available in the following sizes ¹⁾

COX-1010	COX-2020

1) Size definition: COX-1010 refers to a luminous area of 100 mm x 100 mm.

Possible LED Colors

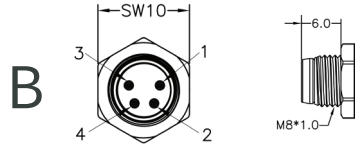
LED	Abbr. ¹⁾	Peak Wavelength ²⁾
White	-WT	5000 K, CRI80
Red	-RD	near 625 nm
Infrared	-IR	near 850 nm
Green	-GN	near 525 nm
Blue	-BE	near 465 nm
Yellow	-YE	near 580 nm

1) Color option will be added to the model name after the size information. COX-2020-RD refers to a coaxiallight 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:

Pin3 (Trigger) is an 'active high' input signal with 5...24V=ON and 0...1V=OFF, it is a high resistance current sink with 0.2 mA for 5V and 5 mA for 24V.

Pin2 (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 10m.

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 max. 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	COX-1010	COX-2020
Optical parameter		
Luminous area (A x B) ¹⁾	100 mm x 100 mm	200 mm x 200 mm
Light emission	diffuse coaxial light with semi-transparent mirror to match camera lens axis with illumination axis	
Recommended use	used for surface inspection, pick-and place, on highly reflective objects or bar code reading	
Recommended light working distance (LWD)	1 mm - 30 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%	
U _{LED(+)} range for -x version ³⁾	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) ⁴⁾	11 W / 9 W / 6 W	22 W / 17 W / 12 W
During ON time at flashed light operation ⁵⁾	25 W	50 W
Recommended LED current (-x version)		
Steady light (100% duty cycle)	600 mA (900 mA for IR)	1200 mA (1500 mA for IR)
Flash light (50% duty cycle, < 500 ms pulse)	1200 mA (900 mA for IR)	2400 mA (1500 mA for IR)
Flash light (25% duty cycle, < 50 ms pulse)	1800 mA (900 mA for IR)	3600 mA (1500 mA for IR)
Flash light (10% duty cycle, < 5 ms pulse)	2400 mA (1800 mA for IR)	4800 mA (3000 mA for IR)
General parameter		
Dimension (H x W x D)	150 mm x 150 mm x 151 mm	250 mm x 250 mm x 250 mm
Weight	1200 g	3300 g
Material	Anodized aluminium housing, antireflex cover and semitransparent mirror both made of glass	
Connector	M8x1 socket, 4 pin, male (for pinning details refer to chart "Electrical Connection")	
Accessories	For cable, mounts and LED controller please check www.mbj-imaging.com	

1) Due to the technical construction of coaxial lightings the FOV (Field of view) is approximately 55% of the luminous area, also depending on LWD and distance of the camera.

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

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

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

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

Application Samples for (-s) controller

