

1. For your safety

The luminaire has been designed in accordance with state-of-the-art standards, manufactured with utmost care using high-quality materials, and tested.

Nevertheless, its use may constitute a risk to persons or cause material damage.



- ▶ Read all enclosed instructions and information.
- ▶ Please observe the warnings included in the documentation and attached to the unit.
- ▶ The device must only be used in technically perfect condition, and only by persons being aware of the risks and dangers involved in operating the device.
- ▶ Keep this document available near the device.

1.1 Designated use

This luminaire is a machine light for illuminating objects on and in machines. The luminaire is suitable for wet environments.

1.2 Safety instructions

Explosion hazard

Operating the luminaire in rooms subject to explosion hazards can trigger an explosion and result in serious injuries or death.

- ▶ **Do not** operate the luminaire in rooms subject to explosion hazards.

Danger due to electric current

Improper use and faulty work on the luminaire may result in injuries and material damage.

- ▶ The connection must be made by a trained skilled electrician only.
- ▶ Compare the mains voltage with the nominal voltage and the frequency specified on the rating plate and make sure that they are identical.
- ▶ SELV version: Operate the luminaire at safety extra low voltage (SELV) only.
- ▶ Have maintenance and repair work carried out by a skilled electrician only.
- ▶ Before performing work on the luminaire, disconnect the luminaire from the power supply.

Safe mounting

A luminaire falling down can result in personal injuries and material damage.

- ▶ Use only the delivered fastening elements or other suitable fastening elements available from the manufacturer.
- ▶ Mount the fastening elements correctly.

Risk of blinding caused by bright light source

Looking directly into the light source may cause temporarily impaired vision and after-images. This may result in irritations, inconveniences, impairments or even accidents.

- ▶ **Do not** look into the light source.
- ▶ Position luminaire in such a way that looking directly into the light source is avoided.

Hazard caused by unsuitable spare parts

Unsuitable spare parts can result in injuries and material damage.

- Only spare parts released by the manufacturer may be used as spare parts.

Danger due to incident laser beam

Direct or indirect incidence of a laser beam may result in the destruction of the LED.

- Use the luminaire only outside the range of action of high-performance lasers such as a cutting laser.

Danger due to high ambient temperature

Exceeding the allowed ambient temperature will shorten the useful life of the electronic components.

- The maximum permissible ambient temperature must not be exceeded.
- Avoid direct exposure to sunlight.

1.3 Warning levels

DANGER

Warnings against hazards that result **directly in serious injuries or death** in case of non-observance.

WARNING

Warnings against hazards that may result in **serious injuries or death** in case of non-observance.

CAUTION

Warning against hazards that may result in **injuries** in case of non-observance.

NOTICE

Warning against hazards that may result in **material damage** in case of non-observance.

2. Model overview

For optimum installation and use of the luminaire, you have to identify the luminaire model. To do so, you will require the model number of the luminaire.

NOTE: The model number can be found on the rating plate of the luminaire.

- Check which model number the luminaire has.
- Determine the luminaire model by referring to the following table, see Tab. 1. For an explanation of the functions, see chapter 6 “Functions of the luminaire”, page 23.

Example: The model number **MQAL 24 SD** stands for the following luminaire model:

MQAL	24	S	D
MACH LED PLUS machine light	Key: 24	Connection: SELV version	Version D Functions: <ul style="list-style-type: none">▪ Switchable▪ Through-wiring

Type	Key	Connection	Version	Functions
MQAL MACH LED PLUS machine light	12	N Mains version	-	Switchable
	18			
	24	S SELV version	D	Switchable Through-wiring
	30			
	36			
	42			
	48			
	60			
	84			

Tab. 1: Model overview.

3. Mounting

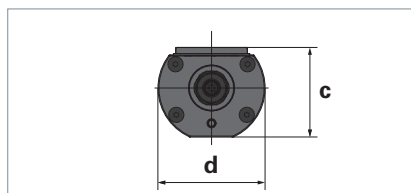
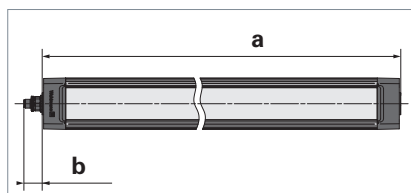
⚠ CAUTION

Risk of injury caused by a falling luminaire.

Personal injury and material damage.

- Use only suitable fastening elements available from the manufacturer.
- Mount the fastening elements correctly.

3.1 Dimensions



No.	Luminaire	Dimension
	MQAL 12	370 mm
	MQAL 18	510 mm or 565 mm
	MQAL 24	370 mm or 650 mm
a	MQAL 30	790 mm
	MQAL 36	510 mm or 565 mm
	MQAL 42	1070 mm
	MQAL 48	650 mm
	MQAL 60	790 mm
	MQAL 84	1070 mm
b	all	25 mm
c	all	58.5 mm
d	all	70 mm

Tab. 2: Dimensions.

3.2 Mounting the luminaire

NOTE: For this luminaire, fastening elements are available as accessories.

- Mount the luminaire using suitable fastening elements to the mounting surface. To do so, use the dimensions of the luminaire, see Tab. 2.

4. Connection

4.1 Connecting the luminaire to the mains voltage (mains version)

NOTE: This chapter applies only to luminaires with the letter **N** in the model number, for example MQAL 24 N.

To connect the luminaires, connecting cables are recommended, which can be found in the Waldmann range of accessories.

⚠ WARNING

Danger of death due to electric shock.

► The connection must be made by a trained skilled electrician only.

NOTICE

Material damage caused by wrong mains voltage.

Damage or destruction of the luminaire.

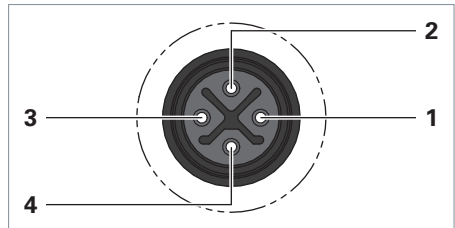
- Compare the mains voltage with the nominal voltage and the frequency specified on the rating plate and make sure that they are identical.
- Observe the pin assignment and the socket assignment.
- Use connecting cable with strands which have a conductor cross-section of at least 1.5 mm².

NOTICE

Material damage caused by unsuitable connecting cable and socket.

Degree of protection of the luminaire is not guaranteed. Penetrating humidity damages the luminaire.

- Use connecting cable and socket which guarantee the degree of protection of the luminaire.



No.	Designation
1	Not used
2	External conductor/phase (L)
3	Neutral conductor (N)
4	Protective earth conductor (PE)

Tab. 3: MQAL xx **N** pin assignment.

- Connect a suitable socket with the S-coded plug.

4.2 Connecting the luminaire to the supply voltage (SELV version)

NOTE: This chapter applies only to luminaires with the letter **S** in the model number, for example MQAL 24 S.

To connect the luminaires, connecting cables are recommended, which can be found in the Waldmann range of accessories.

NOTICE

Material damage caused by wrong mains voltage.

Damage or destruction of the luminaire.

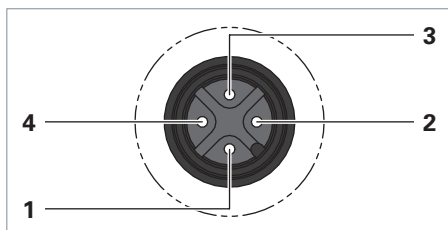
- ▶ The connection must be made by a trained skilled electrician only.
- ▶ Operate the luminaire at safety extra low voltage (SELV) only.
- ▶ Observe the pin assignment and the socket assignment.
- ▶ Use connecting cable with strands which have a conductor cross-section of at least 0.5 mm².

NOTICE

Material damage caused by unsuitable connecting cable and socket.

Degree of protection of the luminaire is not guaranteed. Penetrating humidity damages the luminaire.

- ▶ Use connecting cable and socket which guarantee the degree of protection of the luminaire.



No. Designation

- | | |
|---|-----------------------|
| 1 | DC + |
| 2 | Not used |
| 3 | DC - |
| 4 | Functional earth (FE) |

Tab. 4: MQAL xx **S** pin assignment.

- ▶ Connect a suitable socket with the A-coded plug.

4.3 Through-wiring

Luminaires with through-wiring can be linked to one another via the pre-mounted plug-in connection. These luminaires are identified by the letter **D** in the model number, for example MQAL 24 SD.

To link the luminaires, connecting cables are recommended, which can be found in the Waldmann range of accessories.



WARNING

Danger of death due to electric shock.

- ▶ Before establishing or disconnecting the plug-in connection, disconnect the luminaire from the power supply.

NOTE: In luminaires with through-wiring connected in series, the total current consumption must not exceed **12 A (AC)** respectively **8 A (DC)**.

- ▶ Link the luminaires with a suitable connecting cable.

5. Operation

5.1 Switch-on and switch-off

NOTE: The luminaire is not equipped with a switch of its own. The luminaire will switch on when it is supplied with power.

6. Functions of the luminaire

Depending on the luminaire model, the luminaire has different functions. If you want to find out which functions the luminaire has, see chapter 2 "Model overview," page 19.

6.1 Switchable

This function can be used to switch the luminaire on and off.

6.2 Through-wiring

This function can be used to link several luminaires electrically to one another.

7. What to do if?

Problem	Possible causes	Corrective action
Luminaire is not lit.	Light has not been connected.	► Connect the luminaire, see chapter 4 "Connection", page 21.
	Wrong connection of the luminaire.	► Check the signals applied to the socket.
	Luminaire is defective.	► Contact our service team.

Tab. 5: What to do if?

8. Replacing the lamp

NOTE: The luminaire is maintenance-free.
A lamp replacement is not required.

9. Cleaning



WARNING

Danger of death due to electric shock.

- Disconnect the luminaire from the power supply.

NOTICE

Material damage caused by using wrong cleaning agents.

Damage to the luminaire.

- Make sure the cleaning agent is compatible with the surface.
- Clean the luminaire with a cloth and a mild detergent.

10. Repair

WARNING

Danger of death due to electric shock.

- ▶ Disconnect the luminaire from the power supply.

NOTICE

Material damage caused by improper repair.

Damage or destruction of the luminaire.

- ▶ Have repairs performed only by the manufacturer or skilled personnel trained by the manufacturer.
- ▶ Only spare parts released by the manufacturer may be used as spare parts.

11. Disposal



The luminaire is subject to European Directive 2002/96/EC.

- ▶ Dispose of the luminaire separately from domestic waste using the agencies responsible for disposal and designated by the authorities.

Proper disposal avoids adverse effects on man and the environment.

12. Technical data

NOTE: The data given on the rating plate attached to the rear side of the luminaire apply.

12.1 Electrical values

Designation	Value
Voltage range Mains version	100/120/220 – 240 V AC
Voltage range SELV version	18 – 30 V DC
Frequency Mains version	50/60 Hz
Power consumption	The power consumption is specified on the rating plate of the luminaire.
Operating unit Mains version	Integrated

Tab. 6: Electrical values.





12.2 Classifications

Designation	Value
Protection class Mains version	I
Protection class SELV version	III
Degree of protection	IP 67
Operating mode	Continuous operation
Technical safety check	EN 60598-1

Designation	Value
Maximum permissible ambient temperature	The maximum permissible ambient temperature is specified on the rating plate of the luminaire.

Tab. 7: Classifications.

12.3 Symbols

Symbol	Designation
	Protection class I Operation with protective earth conductor
	Protection class III Operation with safety extra low voltage (SELV)
	CE conformity mark
	Disposal in accordance with European Directive 2002/96/EC

Tab. 8: Symbols.