



Installation and Operating Instructions

D-CLR-60x18-B450-P-SL

Diffuse LED-Dome light, vicolux® smart light

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Validity

These operating instructions are valid for the following devices:

Device	Order no.
D-CLR-60x18-B450-P-SL	1-32-702

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1 ABOUT THESE INSTRUCTIONS

These instructions contain important information required to operate the device safely, appropriately and economically. These instructions must be read completely and carefully in order to avoid hazards and the need for repairs, and to reduce downtimes and lengthen the service life of the device.

The instructions must always be present at the operation site.

The installation and operating instructions are part of the device, and must be followed. Furthermore, the local work protection, accident prevention, environmental protection and general safety regulations apply at the at the operation site of the device.

2 SAFETY

2.1 Representation of Warning Notices

Warning instructions appear at the relevant places in the document to warn of impending hazards. Each warning instruction is introduced by a key word and colour highlighted. The key word indicates the degree of danger.

WARNING

Indicates a potentially dangerous situation. If this situation is not avoided, fatality or very serious injuries may be caused.

CAUTION

Indicates a potentially dangerous situation. If this situation is not avoided, minor or moderate injuries may be caused.

NOTICE

Refers to a situation that may cause property damage or damage to the environment.

2.2 Safety Instructions

Safety instructions warn of general hazards. Knowledge of the basic safety instructions is the basic prerequisite for the safe handling and fault-free operation of the device.

- It is forbidden to modify the device in any way without prior consultation with and the agreement of the manufacturer.
- Accessible parts may be electrically live as a result of a defect or incorrect installation.

Work on the electrical system may only be performed by qualified electricians or under the instruction and supervision of qualified electricians. Never work on the device when it is powered up!

Before starting work on the device, disconnect it from the operating voltage.

- Maintain label in clearly legible condition!
- Only operate the device for its intended purpose, and when it is in a fully-functional, undamaged condition.
- When operating the device together with other devices, systems or other accessories, their operating instructions must also be observed!

2.3 Qualified Personnel

On account of their training and experience, qualified personnel are capable of recognizing the risks involved with handling the this device, and avoiding possible hazards.

Only those persons may work on or with this device who are qualified for their particular task, and who have read and understood the safety and warning instructions in this document.

3 PRODUCT DESCRIPTION

vicolux[®] smart light

vicolux[®] smart light is a new type of lighting technology, with which Vision & Control GmbH has revolutionized industrial image processing.

vicolux[®] smart light technology does much more than the traditional approach, in which a lighting controller only adjusts the brightness of a lighting unit.

By continuously recording and evaluating sensor data from the lighting unit, the vicolux[®] smart light lighting controller optimally adjusts the lighting to the conditions, and provides a constant light.

3.1 Intended Use

The device is intended for use solely as an internal lighting element for machine vision in the field of automation technology. The device may only be used in enclosed areas.

Safe, trouble-free operation of this device is conditional upon its proper transport and storage, mounting, installation, commissioning, operation and maintenance. The permissible environmental conditions must be maintained.

Limitation of liability

The manufacturer shall not be held liable for any damage that occurs as a result of:

- Use for any purpose, other than intended
- Non-compliance with this guide
- Opening the device and unauthorized modifications to the device
- Use of unskilled/untrained personnel
- Operating the device if it is not in its original, standard, technical condition
- Using unauthorized and incompatible accessory components

3.2 Foreseeable Misuse

Dangers may arise from the device if it is used improperly or for other than its intended purpose.

The device is not designed for use in potentially explosive atmospheres. These include, but are not restricted to, EU directives 1999/92/EC (ATEX137) and 2014/34/EU (ATEX 95).

3.3 Labelling of the Device

Product name

Designation	Description
D	Dome light
CLR	Transparent LED cover
60x18	Dimension of luminous field: Ø 60.0 mm Dimension of through view: Ø 18.0 mm
B450	Blue, peak wavelength: 450 nm
P	Power-LED
SL	vicolux® smart light

Rating plate



Figure 1: Rating plate

- 1 Product name
- 2 CE mark
- 3 Data Matrix Code

3.4 Display and Operating Elements

The device does not have any display or operating elements.

3.5 Structure of the Device

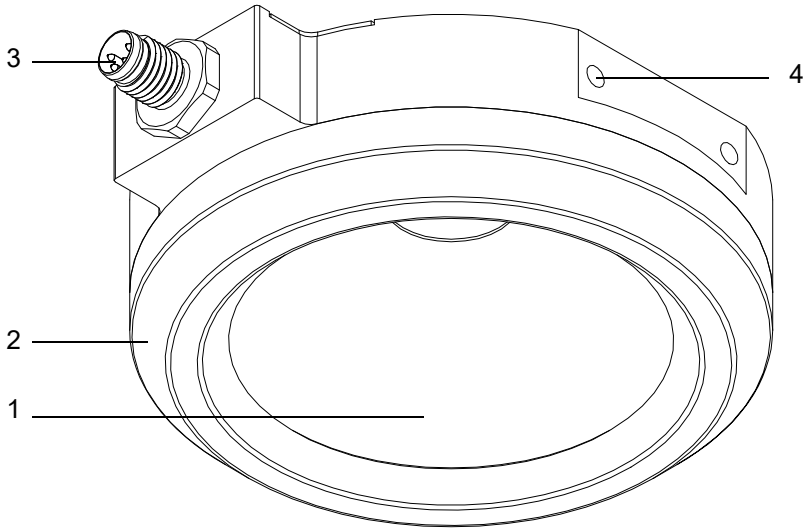


Figure 2: Structure of the device

- 1 Luminous field
- 2 Housing
- 3 4-pin M8 plug
- 4 2 x M4 threaded holes (on both sides)
Maximum screw-in depth: 4.5 mm

3.6 Dimensional Drawing

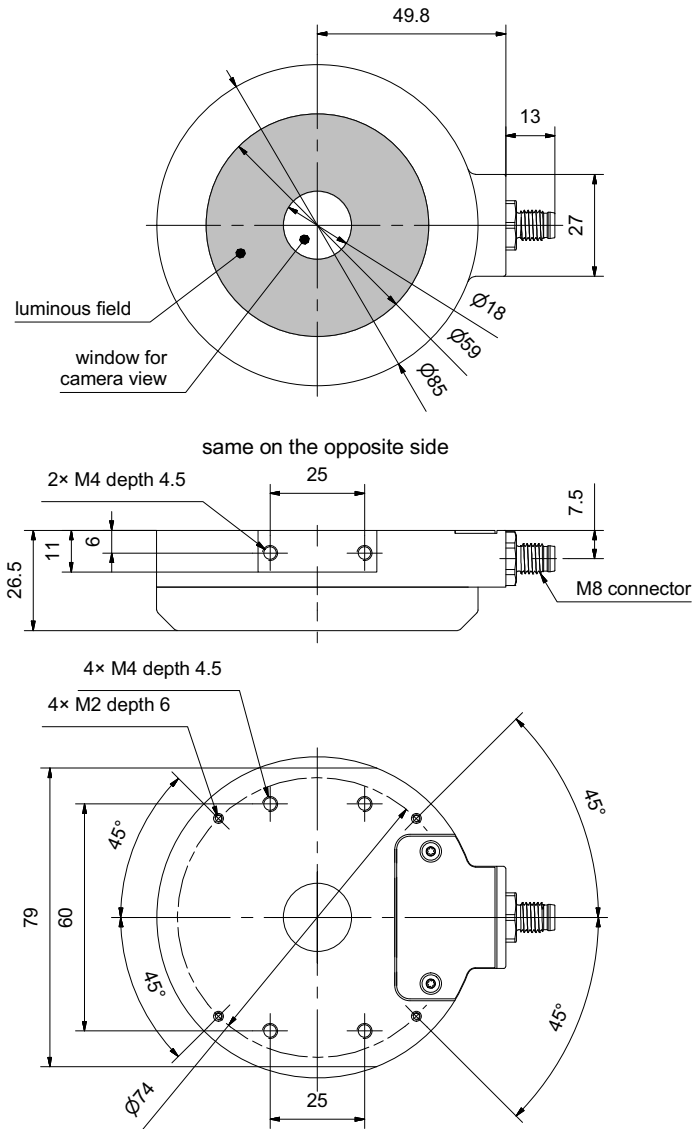


Figure 3: Dimensional Drawing (all dimensions in mm)

4 PACKAGING AND TRANSPORTATION

NOTICE

The ambient conditions specified in the data sheet must be observed during storage and transport
(see chapter 8.4 “Ambient Conditions” on page 21).

- Do not expose the device to strong variations in temperature.
 - After storage and transport, allow the device to adjust slowly to the ambient temperature at the place of use.
-

The device is suitably packed for the expected transport conditions. Only environmentally friendly materials are used for the packaging.

The fixing packaging is intended to protect the device against transport and other damage until it is installed. Therefore do not destroy the packaging, and do not unpack the device until shortly before it is installed.

The special folding mechanism ensures that the stretch film securely fixes the product onto the corrugated board format. This ensures that slipping can be avoided.

The device may only be transported in its original packaging or in other suitable electro static discharge packaging. Adapters and mounted parts must be dismounted before the device is transported.

The packaging materials must be disposed of in a way that does not harm the environment, and in compliance with the currently valid legal stipulations and the local regulations.

5 INSTALLATION AND MOUNTING

NOTICE

Protect the coated inner surface of the lighting unit against soiling!

NOTICE

Electronic components and modules are sensitive to electrostatic discharges.

- Appropriate ESD protection measures must be taken before the device is mounted.
 - The device may only be connected when it is electrically dead.
-

5.1 Mounting the Device

The device has eight M4 tapped mounting holes (1 and 2), four on the mounting surface and two on each side.

There are also four M2 tapped holes (3) for attaching accessories (see chapter 3.6 “Dimensional Drawing” on page 10).

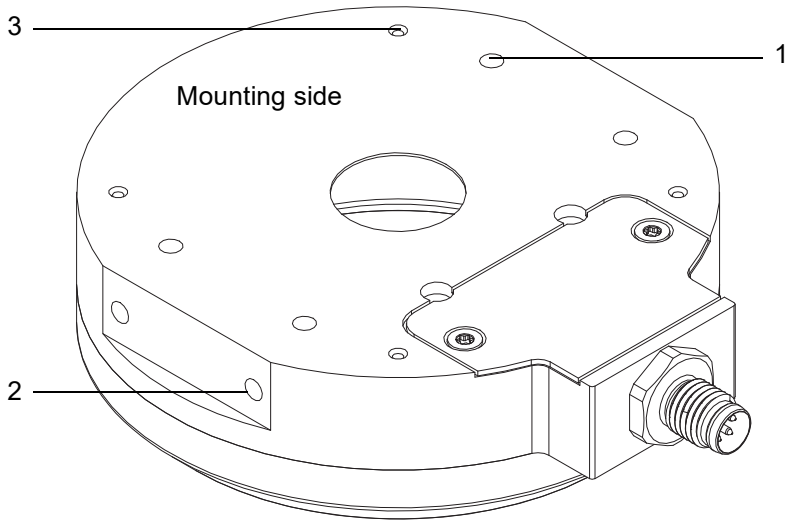


Figure 4: *Mounting holes*

- 1 4 x M4 threaded holes (on mounting side)
Maximum screw-in depth: 4.5 mm
- 2 4 x M4 threaded holes (on both sides)
Maximum screw-in depth: 4.5 mm
- 3 4 x M2 threaded holes
Circular arrangement (Ø 74.0 mm)
Maximum screw-in depth: 6.0 mm

(Exact positions of the threaded holes:
[see chapter 3.6 "Dimensional Drawing" on page 10](#))

6 OPERATION

6.1 Connecting Device

Connect the device according to the pin assignment.

NOTICE

- Operate the device only using suitable power sources (LED or flash controllers).
Observe the admissible parameters (see chapter 8 "Technical Data").
- The device is protected against polarity inversion and overheating (protection against overheating is only guaranteed in combination with a vicolux® smart light lighting controller).
- Comply with the safety regulations for the operation of electrical installations and devices.

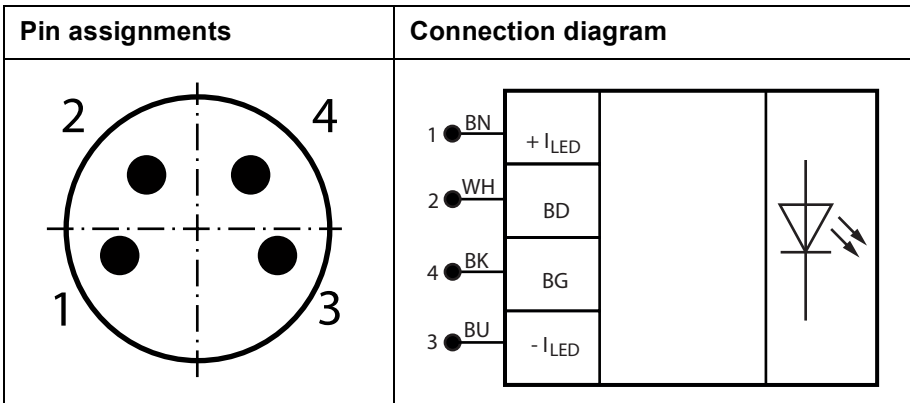


Figure 5: Pin assignments/Connection diagram

Pin	Wire colour	Signal	Description
1	BN	+ I _{LED}	LED anode, positive current input
2	WH	BD	Data channel for vicolux [®] smart light ¹⁾
3	BU	- I _{LED}	LED cathode, negative current input
4	BK	BG	Data channel for vicolux [®] smart light ¹⁾

1) Only use with vicolux[®] smart light lighting controller.

6.2 Commissioning

Personal injuries caused by flicker, dazzle or radiation

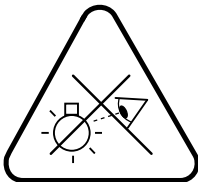
CAUTION



Flicker, dazzling and stroboscopic effects can cause psychological disturbances, such as headache, a feeling of unease or tiredness.

Dazzle hazard

- The strong dazzling effect can cause temporarily impaired vision, that can lead to irritation, impairment of vision or accidents. Wear protective goggles!



Danger of burns due to hot surface**⚠ CAUTION**

The housing of the device can reach temperatures exceeding 55 °C during operation.

- Do not touch the device during operation.
- Allow the device to cool before touching it.

6.3 Operating Modes

Continuous mode

The device will be continuously operated using LED current permissible in continuous mode. Do not exceed the maximum permissible value of continuous current ([see chapter 8.2 “Electrical Parameters”](#)).

Flash mode

The device will be operated using current pulses permissible in flash mode. Do not exceed the maximum permissible parameters in the flash mode ([see chapter 8.2 “Electrical Parameters”](#)).

7 MAINTENANCE AND TECHNICAL SUPPORT

7.1 Maintenance

The device is maintenance-free. Depending on the operating environment, soiling may have to be cleaned off the device in order to generate the maximum intensity of illumination and homogeneity. The device may only be cleaned when it is electrically dead.

Cleaning the inner surface

- Clean the inner surface of the lighting unit only with an optical brush and purified compressed air. Do not use cleaning agents which contain solvents!

Cleaning the outer face

- Clean the outer surface with a damp cloth.
- Remove heavy contamination with a cleanser approved for anodised aluminium. In doing so, follow the instructions for using the cleanser.
- Cleansers must not be applied directly to the housing, the housing must not be immersed in the cleanser.

7.2 Technical Support

Please contact your local sales partner or our Technical Support if you have any questions concerning the device and the matching accessories.

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8 TECHNICAL DATA

8.1 General Parameters

Parameters	Properties
Housing material	Aluminium, anodised
Optical material	Matt lacquered surface
Housing dimensions	Ø 85.0 mm Height: 26.5 mm
Dimension of luminous field	Ø 60.0 mm
Dimension of through view	Ø 18.0 mm
Plug connector	M8, 4-pole
Weight	170 g
Degree of protection	IP 67
Protection class	III, for the operation of separated extra-low voltage
Risk group (DIN EN 62471)	Exempt
Thermal protection T_{MAX}	70 °C
Protection against overheating is only guaranteed in combination with a vicolux® smart light lighting controller.	

8.2 Electrical Parameters

Parameters	Min	Nom	Max
Continuous mode			
LED current I_{LED}	0 A ¹⁾		1.5 A ²⁾
Forward voltage U_{LED}	8.0 V		10.5 V
Power consumption P_{total}			15.0 W ²⁾

Parameters	Min	Nom	Max
Flash mode / Pulse operation			
LED current I_{LED}	0 A ¹⁾		9.6 A ²⁾
Forward voltage U_{LED}	11.0 V		13.5 V
Power consumption P_{total}			15.0 W ²⁾
Control factor $t_{ON} : t_{OFF}$			1 : 9
(see diagram "Pulse load" on page 20)			

- 1) The wavelengths stated in chapter 8.3 "Radiation Parameters" are maintained as from an LED current of 0.60 A
- 2) The maximum values refer to an ambient temperature of +25 °C if convection is unobstructed.

8.3 Radiation Parameters

Parameters	Min	Nom	Max
Beam angle		> 120°	
Peak wavelength		451 nm	
Centroid wavelength		452 nm	
Continuous mode			
Irradiance		830 W/m ²	
Working distance = 5 mm, measured in the optical axis at maximum parameters			
Flash mode / Pulse operation			
Irradiance		3700 W/m ²	
Working distance = 5 mm, measured in the optical axis at maximum parameters			

Pulse load

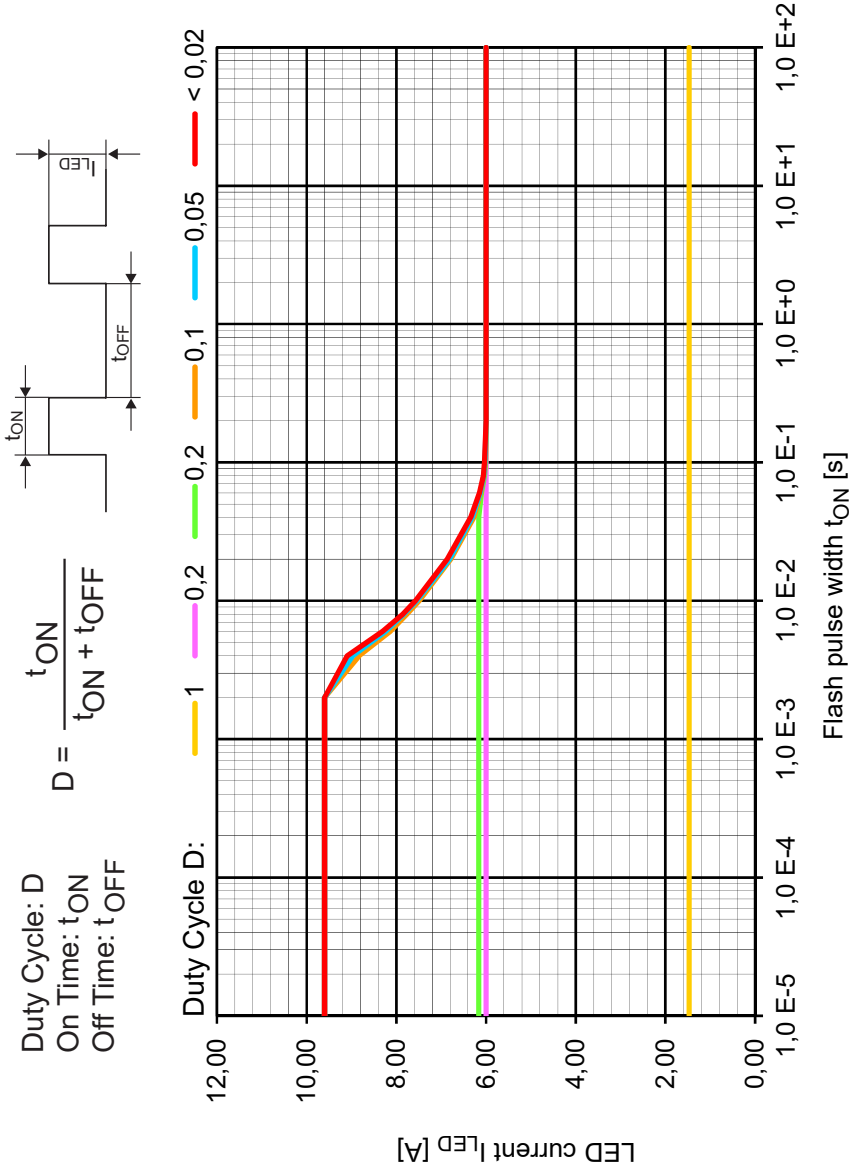


Figure 6: Pulse load at ambient temperature = 25 °C

Spectral emission

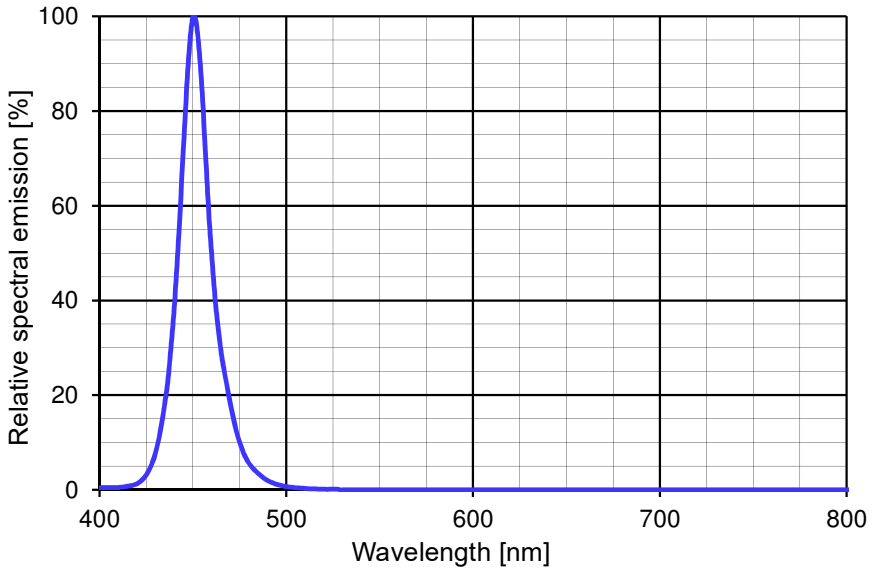


Figure 7: Spectral emission

8.4 Ambient Conditions

Parameters	Operation	Storage/transport
Temperature	- 10 °C to 55 °C	- 20 °C to 85 °C
Air humidity	20 % to 80 %	20 % to 95 %
Condensed water	not permitted	not permitted

8.5 Accessories

A wide range of accessories are available for the D-CLR-60x18-B450-P-SL light. You will find more detailed technical information about the accessories in the product catalogue under www.vision-control.com.

9 DISPOSAL

The device is RoHS-compliant.



Packaging and ancillary packaging material can and should be recycled. The product itself must not be disposed of in the household waste.

Instructions for the proper disposal of old devices can be obtained from the manufacturer, local sales partner or relevant national authority. Alternatively, the device can be returned to the manufacturer for proper disposal.

10 DECLARATION OF CONFORMITY

EC-Declaration of Conformity

In accordance with Directive 2014/30/EU (electromagnetic compatibility)
dated 26 February 2014

We herewith declare that the device described below, by virtue of its design and construction and moreover in the type brought onto the market by us, conforms to the relevant safety and health requirements of the EC Directive 2014/30/EU. This declaration shall lose its validity if a modification is made to the device that we have not authorised.

Manufacturer: Vision & Control GmbH
Mittelbergstraße 16
D-98527 Suhl, Germany

Description of the device:

Designation:	Diffuse LED-Dome light, vicolux® smart light
Type:	D-CLR-60x18-B450-P-SL
Order no.:	1-32-702

Compliance with other EC Directives applicable to the product has been declared:

Directive 2006/25/EC – Artificial optical radiation

Directive 2006/95/EC – Low Voltage Directive

Directive 2011/65/EU – Restriction of Hazardous Substances

Applied harmonized standards:

DIN EN 61000-6-2:2006-03	DIN EN 61000-6-4:2011-09
DIN EN 61000-4-2:2009-12	
DIN EN 62471:2009-03 / EN 62471:2008	DIN EN 62471 supplement 1:2010-06

Date of declaration: 15.06.2016

Name of the signatory: Dr. Ulrich Pahl, Head of development

11 LIST OF CHANGES

Version	Date	Contents/ Chapter

12 NOTES

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