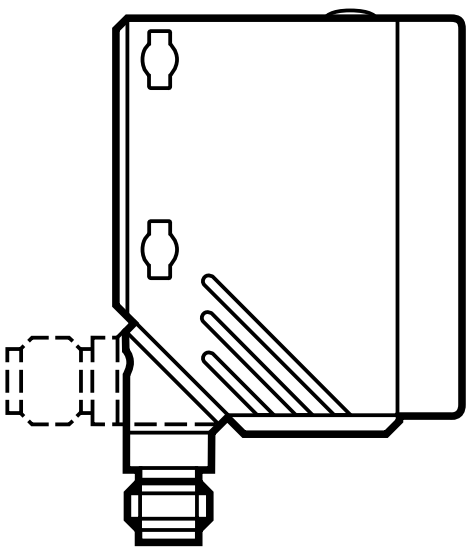
Operating instructions
Colour sensor

UK

O5C500



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1 Preliminary note

1.1 Symbols used

▶ Instruction

> Reaction, result

[…] Designation of pushbuttons, buttons or indications

→ Cross-reference

Important note
Non-compliance can result in malfunction or interference.

Information
Supplementary note.

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2 Functions and features

The colour sensor detects objects and materials without contact and indicates their presence in diffuse reflection operation.

Range: → type label.

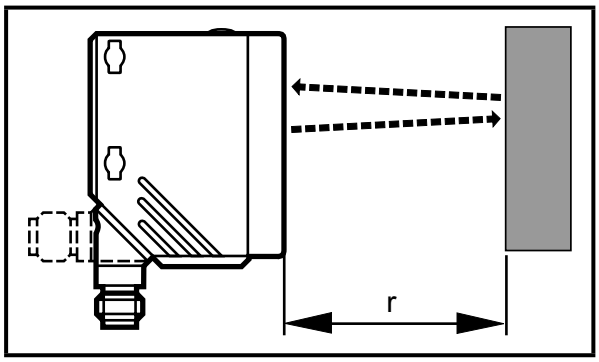
3 Installation

▶ Secure the unit to a bracket.

▶ Align the sensor to the object to be detected by means of the light spot.

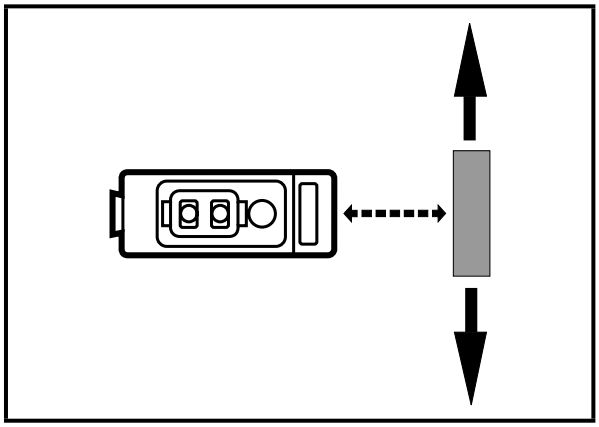
3.1 Installation conditions

▶ For the range (r) we refer you to the print on the unit or the technical data sheet.

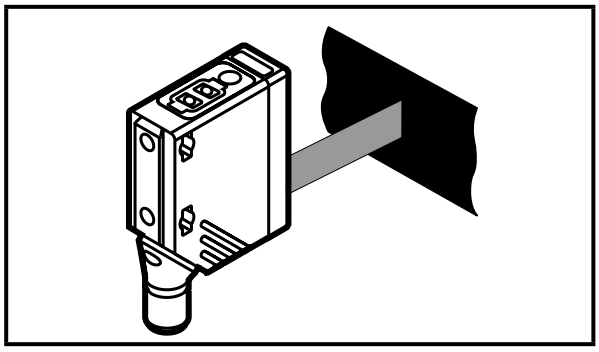


The objects to be detected are to move transversely to the lens of the sensor.

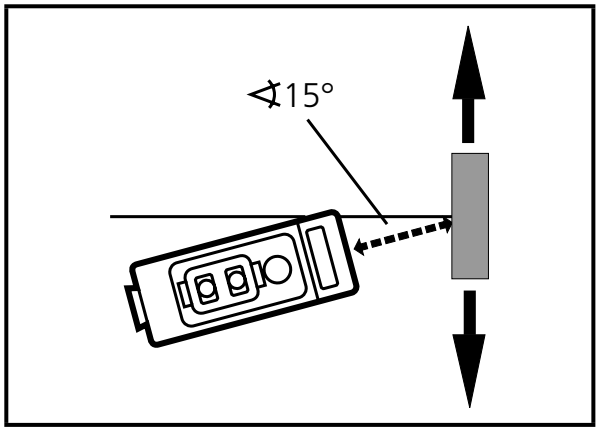
▶ If movement is in a different direction, safe switching must be verified.



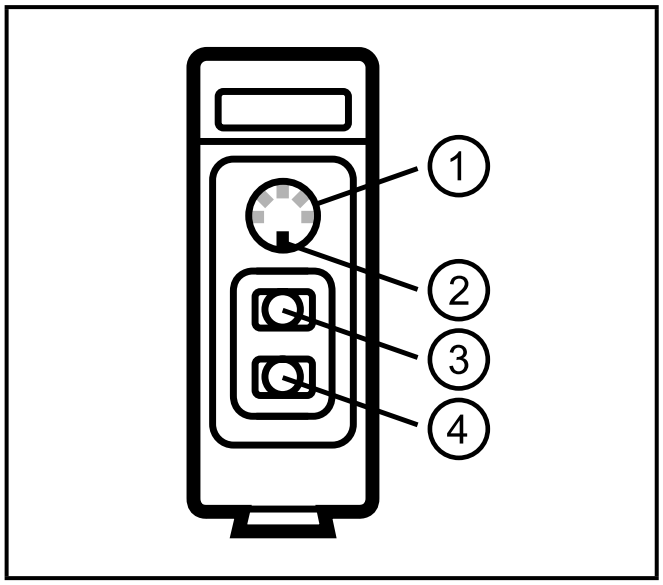
▶ Position the light spot on the colour surface to be detected.



▶ To detect highly reflective materials incline the sensor by approx. 15° horizontally to the optical axis.



4 Operating and display elements



1: 5 green LEDs for the tolerance steps

= lowest tolerance step

= highest tolerance step

2: yellow LED for the switching status
3: [OUT on] button
4: [OUT off] button

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5 Electrical connection

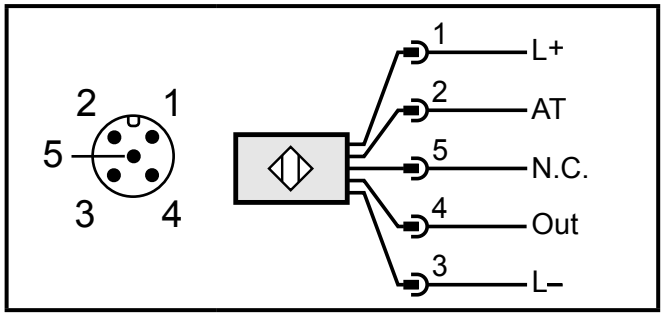
The unit must be connected by a qualified electrician.

- ▶ The national and international regulations for the installation of electrical equipment must be adhered to.
- ▶ Ensure voltage supply to EN 50178.

▶ Disconnect power.

▶ Connect the unit as follows:

DC PNP/NPN



pin 1 = L+
pin 2 = activation trigger (AT)
pin 3 = L-
pin 4 = switching output P or N autodetect
pin 5 = not connected

On power up, the unit detects automatically if the switching output is connected to L- (= PNP) or to L+ (= NPN). The polarity of the activation trigger is set according to the polarity of the switching output.

The switching output and the activation trigger must be connected with the same polarity: PNP or NPN!

5.1 Activation trigger

The activation trigger (AT) can be used for triggering the sensor via an external voltage signal.

Voltage signal on the activation trigger

PNP connection	NPN connection	
high	low	sensor deactivated, switching output off (no object recognition)
low or not connected	high or not connected	sensor not influenced, switching output on (object recognition)

The yellow LED signals the switching status irrespective of the activation trigger.

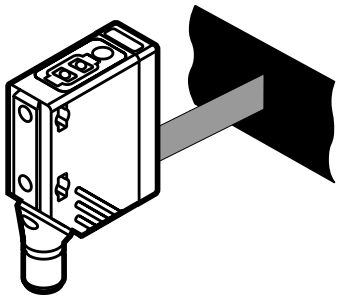
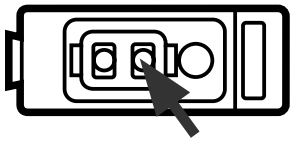
6 Settings

To make settings on the unit, the electronic lock must be disabled. (→ 6.3 Electronic lock). On delivery the unit is not locked. The factory setting of the unit is tolerance step 2.

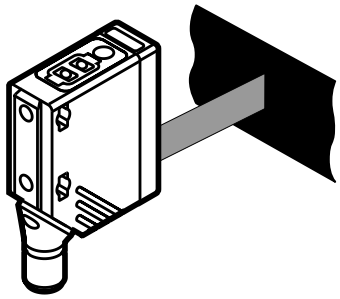
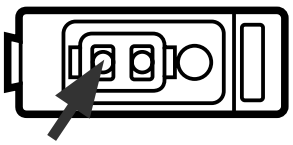
► Do not move the object to be detected during the setting process.

6.1 Colour teaching

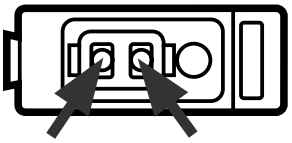
6.1.1 The sensor is to switch when the colour is detected

1	► Position the light spot on the colour surface to be detected.	
2	► Press [OUT on] for 2...6 s. > Yellow LED flashes (2 Hz). ► Release [OUT on]. > LEDs go out.	
3	After 1 s the setting is completed. > The yellow LED indicates the switching status (irrespective of AT). > The green LED indicates the set tolerance step. Unit is ready for operation.	

6.1.2 The sensor is not to switch when the colour is detected

1	▶ Position the light spot on the colour surface to be detected.	
2	▶ Press [OUT off] for 2...6 s. > Yellow LED flashes (2 Hz). ▶ Release [OUT off]. > LEDs go out	
3	After 1 s the setting is completed. > The yellow LED indicates the switching status (irrespective of AT). > The green LED indicates the set tolerance step. Unit is ready for operation.	

6.1.3 Colour teaching failed

1	> Yellow LED flashes quickly, 8 Hz.	
2a	If colour teaching with a lower tolerance step is possible, the unit changes into the tolerance setting mode. > Highest possible tolerance step is flashing. > The yellow LED indicates the switching status (irrespective of AT). ▶ If necessary, adapt the tolerance step (→ 6.2.1 Tolerance setting). ▶ To acknowledge the tolerance step press [OUT on] / [OUT off] simultaneously. Setting operation completed.	
2b	If colour teaching is not possible due to too low or too high a colour intensity, the unit returns to the normal operating mode with unchanged values. Setting operation stopped.	

6.2 Extended settings

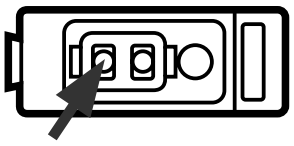
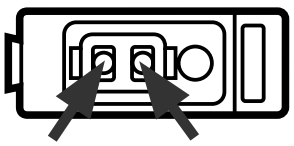
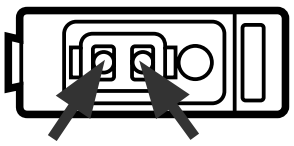
6.2.1 Tolerance setting

Tolerance setting allows subsequent adaptation of the tolerance range to the colour teaching performed last.

The unit features 5 selectable tolerance steps (→ 4 Operating and display elements):

- Tolerance step 1: minimum deviations (RGB colour values or shade, brightness and saturation) from the colour to be detected are tolerated.
- Tolerance steps 2 - 5: larger deviations are tolerated.

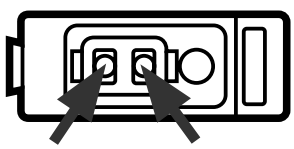
The factory setting of the unit is tolerance step 2.

1	▶ Press [OUT off] for 6...10 s. > The green LED flashes with the tolerance step set last (2 Hz). ▶ Release [OUT off]. > The yellow LED indicates the switching status (irrespective of AT).	
2	Selection of the tolerance step. Increase the tolerance step (up to the max possible tolerance step*). ▶ Press [OUT on]. Decrease the tolerance step. ▶ Press [OUT off]. > The green LED flashes according to the tolerance step selected.	
3	Acknowledgement of the selected tolerance step. ▶ Press [OUT on] and [OUT off] simultaneously. If the selection is not acknowledged, the unit saves the selected tolerance step automatically after 15 min.	

*) Colour teaching with a higher tolerance step is not possible.

6.3 Electronic lock

The unit can be locked electronically to prevent unauthorised setting. On delivery the unit is not locked.

▶ Press [OUT on] and [OUT off] simultaneously for 10...20 s. > Acknowledgement is indicated by a change of the LED switching status. ▶ To unlock repeat this step.	

7 Set-up / operation

▶ Check whether the unit operates correctly.

> Display by LEDs.

Display	Description
Yellow LED on	Switching output OUT switched.
Yellow LED flashes at 2 Hz	Change to colour teaching mode or internal fault.
LED yellow flashes at 8 Hz.	Colour teaching failed.
Green LED is lit	Tolerance step
Green LED flashes at 2 Hz	Change to the tolerance teaching mode.
Green LED flashes at 8 Hz	The max. possible tolerance step has been reached.

8 Maintenance, repair, disposal

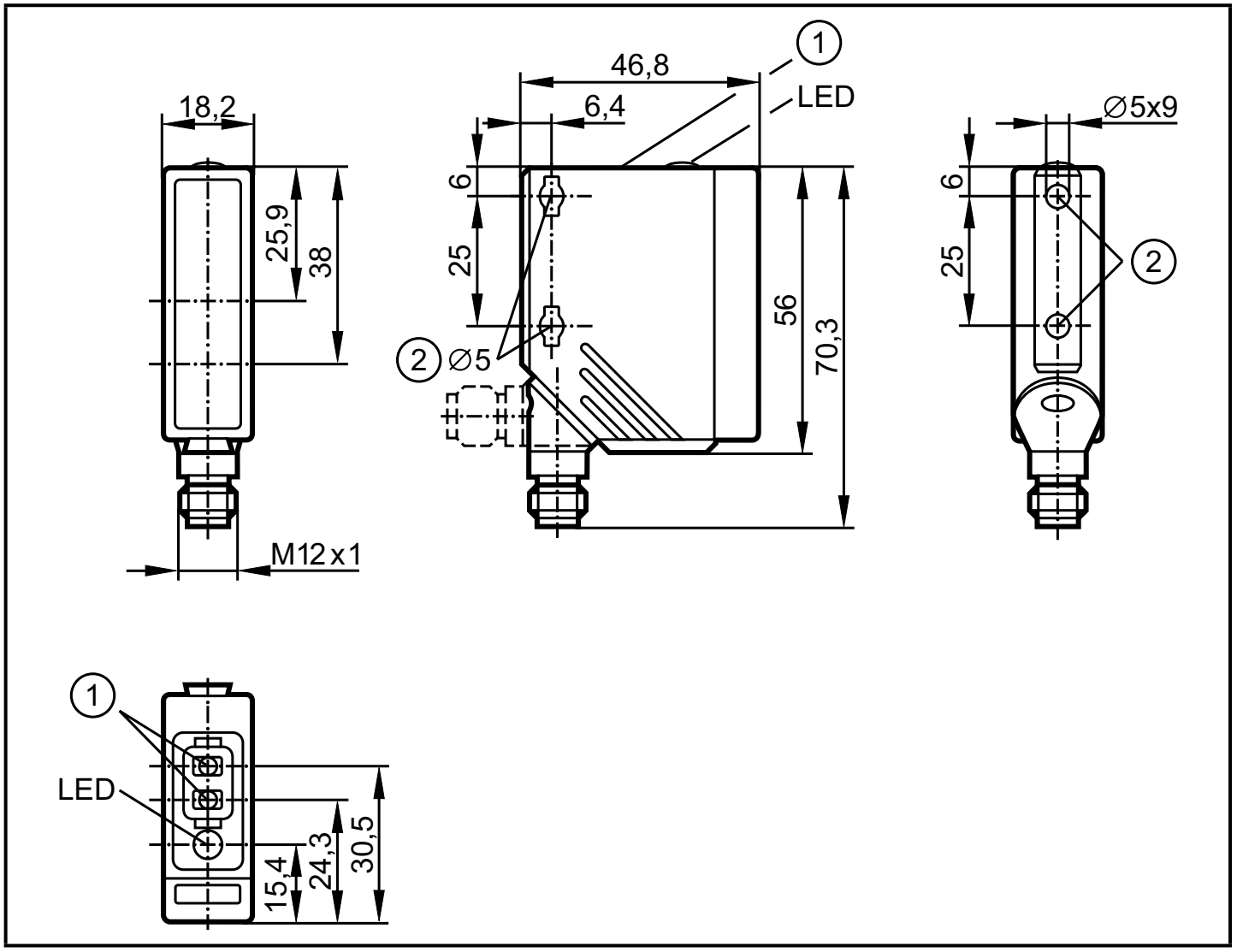
▶ Keep the lens of the sensor free from soiling.

▶ For cleaning do not use any solvents or cleaning agents which could damage the plastic parts.

▶ After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

Faulty sensors must only be repaired by the manufacturer.

9 Scale drawing



Dimensions in mm

1: Programming buttons

2: When an M5 mounting screw is used: tightening torque max. 2 Nm.

Technical data and further information at www.ifm.com