



**Model Number**

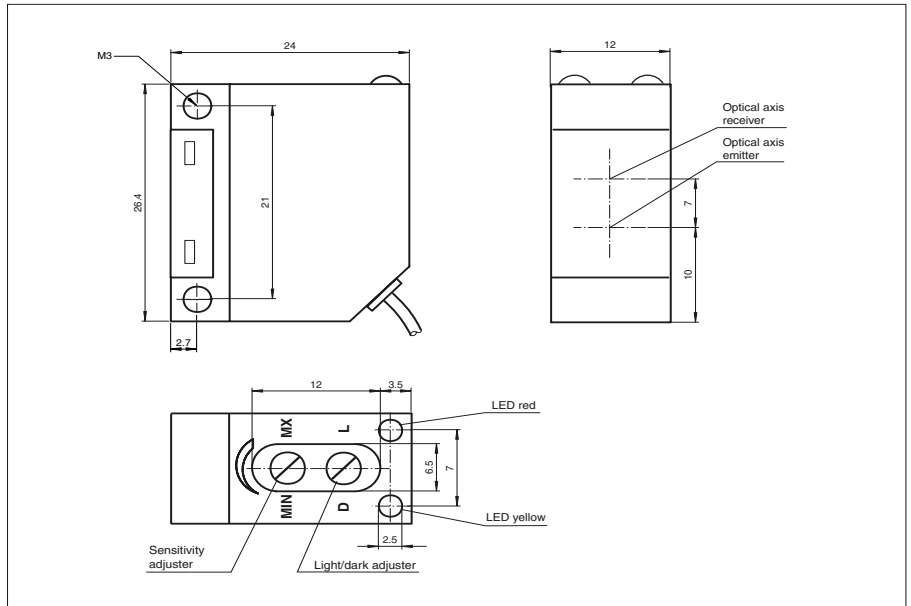
**ML5-6/32/33/115**

Retro-reflective sensor  
with fixed cable

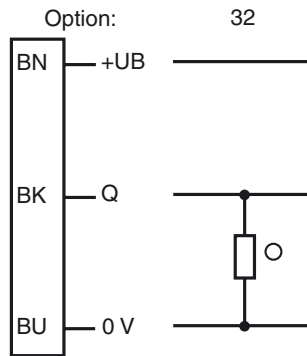
**Features**

- Miniature design
- Infrared light design
- Light/dark ON, switchable
- Pre-fault indication
- Protection degree IP67
- Thru-holes for screw mounting

**Dimensions**



**Electrical connection**



○ = Light on  
● = Dark on

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## Technical data

### General specifications

Effective detection range	0 ... 2000 mm
Reflector distance	0.01 ... 2 m
Threshold detection range	2500 mm
Light source	LED, Infrared 950 nm
Approvals	CE, cULus Listed 57M3 (Only in association with UL Class 2 power supply; Type 1 enclosure)
Reference target	H50 reflector
Light type	infrared, modulated light
Ambient light limit	≤ 20000 Lux sun light ≤ 5000 Lux halogen light

### Indicators/operating means

Function display	LED yellow: switching state LED red: pre-fault indication
Operating elements	light/dark switch, sensitivity adjuster

### Electrical specifications

Operating voltage	$U_B$	10 ... 30 V DC
Ripple		10 %
No-load supply current	$I_0$	≤ 30 mA

### Output

Switching type	light/dark ON, switchable	
Signal output	1 PNP output, short-circuit proof, protected from reverse polarity, open collector	
Switching voltage	max. 30 V DC	
Switching current	max. 200 mA	
Voltage drop	$U_d$	≤ 2.5 V
Switching frequency	$f$	≤ 500 Hz
Response time		1 ms

### Standard conformity

Standards	EN 60947-5-2
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### Ambient conditions

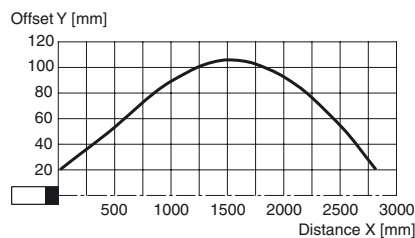
Ambient temperature	-25 ... 70 °C (248 ... 343 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)

### Mechanical specifications

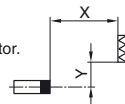
Protection degree	IP67 according to EN 60529
Connection	5 m cable, 3 x 0,14 mm <sup>2</sup> , PUR
Material	
Housing	Polycarbonate
Optical face	PMMA
Mass	approx. 45 g

## Curves/Diagrams

### Characteristic response curve



Permissible distance (offset) between optical axis and retro-reflector.



## Additional Information

### Conventional use:

The reflex light beam switch contains the emitter and receiver in a single housing. The light from transmitter is reflected back to the receiver by a reflector. If an object interrupts the light beam the switching function is initiated.

### Mounting instructions:

The sensor can be fastened over the through-holes directly or with a mounting bracket (not included in scope of supply). The base surface must be flat to avoid distorting the housing during mounting. It is advisable to secure the bolts and screws with washers to prevent misalignment of the sensor.

**Instructions for adjustment:**

Connect the sensor to operating voltage, the LED green lights up constantly.

Mount suitable reflector opposite light beam switch and align roughly.

The exact adjustment takes by swivelling the sensor horizontally and vertically. With optimum light reception the yellow LED lights up constantly. In case of bad alignment, the red LED lights up.

**Object detection check:**

Move the object into the light beam. If the object is recorded, the yellow LED goes off. If it isn't going off, reduce the sensitivity with the potentiometer until it goes off. It should light up constantly again when the object is removed.

The red LED lights up if reception deteriorates (e.g. soiled lenses or by maladjustment ) and when falling short of the stability control.

**Illustration:**

We recommend that you clean the optical interfaces and check the plug-in connections and screw connections at regular intervals.