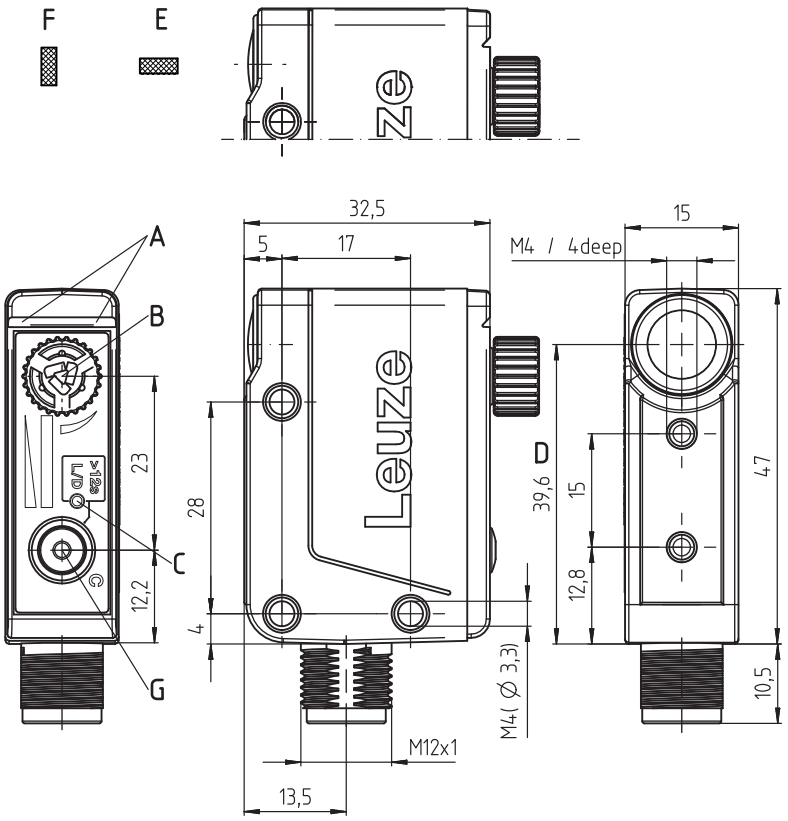
KRT18BW

White light contrast sensor

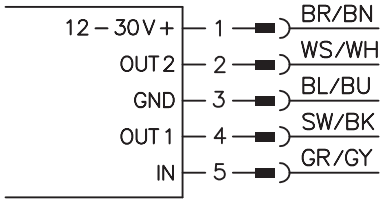
- White light transmitter
- Easy to adjust through display of the signal strength on the device
- Simple sensitivity adjustment with multiturn potentiometer
- Removable rotary operating knob enables comfortable, tool-free adjustment
- Maximum packing quality through short response time
- Automatic luster suppression
- Remote control via control cable
- Blocking of all operational controls via control cable

Dimensioned drawing



A Indicator diodes
B Knurled knob for sensitivity adjustment (removable)
C Display of the special functions
D Optical axis
E Horizontal light spot orientation (transverse)
F Light spot orientation vertical (lengthwise)
G Light/dark switching toggle switch

Electrical connection



Accessories:

(available separately)

- Mounting systems (BTU 200M…, BT 95)
- Mounting adapter for standard design (80 mm x 53 mm x 30 mm) BTX 018M
- Cable with M12 connector (K-D M12…)

en 2022/04/08 50147926

Technical data

Optical data

Operating range		13mm ± 3mm
Light source [1]		White LED
Light spot dimensions		1mm x 4mm (at a distance of 13 mm)
Light spot orientation		Vertical (lengthwise) or horizontal (transverse)

Time behavior

Switching frequency		15kHz
Response time		33µs
Readiness delay		< 300ms

Electrical data

Operating voltage U_B [2]		12 … 30VDC (incl. residual ripple)
Residual ripple		≤ 15 % of U_B
Open-circuit current		25mA (at 24V)
Switching outputs/functions	OUT1	Push-pull, PNP dark switching (dark on), NPN light switching (light on), changeover-capable
	OUT2	Push-pull, PNP light switching (light on), NPN dark switching (dark on), changeover-capable
Signal voltage high/low		≥ (U_B-2V)/≤ 2V
Output current		Max. 100mA
Input	IN	Configuration input and blocking of the operational controls

Indicators

Green LED continuous light	Ready
Yellow LED continuous light	Switching signal - dark switching (dark on)
Bar graph	Reception signal strength, 13-level
Yellow LEDs - special functions	Light/dark switching

Mechanical data

Housing	Diecast zinc, chemically nickel-plated
Connector	Diecast zinc, chemically nickel-plated
Optics	PMMA
Operation	Multiturn potentiometer for sensitivity adjustment, button for changing between light/dark switching
Weight	60g
Connection type	M12 connector, 5-pin

Environmental data

Ambient temp. (operation/storage)	-40°C … +60°C/-40°C … +70°C
Protective circuit [3]	2, 3
VDE protection class [4]	III
Degree of protection	IP67, IP 69K
Light source	Exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 [2] [5] [6] [7] [8]
Chemical resistance	Tested in accordance with ECOLAB

Additional functions

Full control of the application	13-level bar graph signal display on the device
Light/dark switching (L/D)	Can be activated via control button

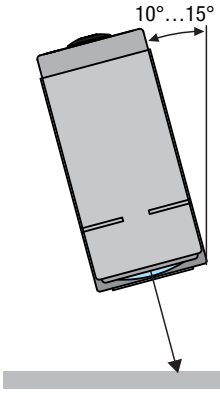
1) Average life expectancy 100,000h at an ambient temperature of 25°C
2) For UL applications: use is permitted exclusively in Class 2 circuits according to NEC
3) 2=polarity reversal protection, 3=short circuit protection for all transistor outputs
4) Rating voltage 50V
5) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.24A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)
6) For use in NFPA 79 applications only.
7) Adapters providing field wiring means are available from the manufacturer. Refer to manufacturers information.
8) Caution – Use of controls or adjustments or performance of procedures other than specified herein may result in hazardous light exposure.

Notes

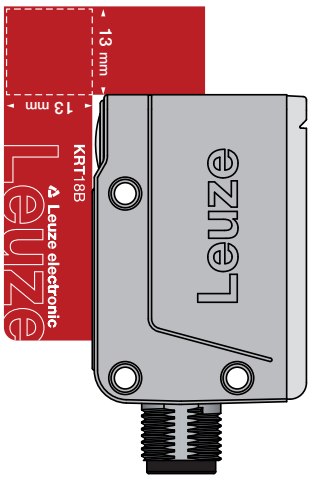
Observe intended use!

- This product is not a safety sensor and is not intended as personnel protection.
- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

- **Glossy objects:**
  With glossy objects, the sensor is to be fastened at an inclination of approx. 10° … 15° relative to the object surface.



- **Alignment aid:**
  An alignment aid is included in the scope of delivery of each sensor. This facilitates simple alignment of the sensor to the working distance of 13 mm without needing to perform electrical commissioning.



Part number code

K	R	T	1	8	B	W	.	H	2	/	G	6	T	-	M	1	2

Operating principle

KRT	Contrast sensor

Series

18B	18B series

Light source

W	White light

Light spot orientation

H	Horizontal (transverse)
V	Vertical (lengthwise)

Setting

2	Multiturn potentiometer with bar graph signal display, light/dark switching via button

Pin assignment of connector pin 4 / black cable wire (OUT1)

G	Push-pull switching output, PNP dark switching (dark on), NPN light switching (light on)

Pin assignment of connector pin 2 / white cable wire (OUT2)

6	Push-pull switching output, PNP light switching (light on), NPN dark switching (dark on)

Pin assignment of connector pin 5 / gray cable wire (IN)

T	Input for light/dark switching and locking of the operational controls

Connection technology

M12	M12 connector, 5-pin

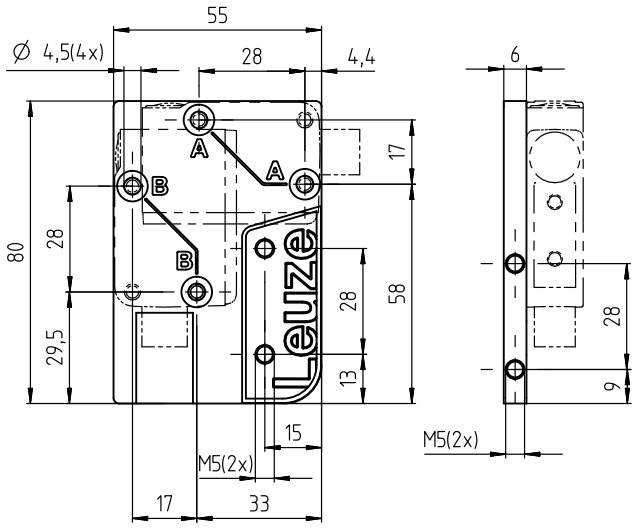
Order guide

The sensors listed here are preferred types; current information at www.leuze.com

Order code	Part no.	Features
KRT18BW.H2/G6T-M12	50147611	Light spot orientation horizontal (transverse), antivalent push-pull outputs, potentiometer with bar graph Selectable additional function: light/dark switching
KRT18BW.V2/G6T-M12	50147605	Light spot orientation vertical (lengthwise), antivalent push-pull outputs, potentiometer with bar graph Selectable additional function: light/dark switching
Accessories		
BTX 018M	50133412	Mounting adapter for mounting on mounting devices for sensors in the standard design (80 mm x 53 mm x 30 mm)

Mounting adapter BTX 018M

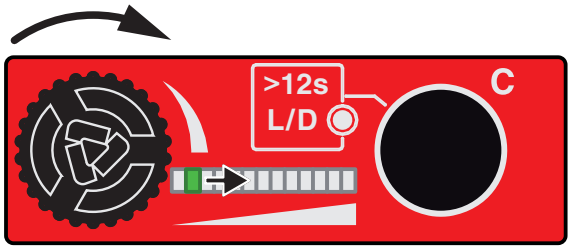
With the help of mounting adapter BTX 018M (part no. 50133412), contrast sensors KRT18B… can be mounted on existing mounting devices for contrast sensors in the standard design (80mm x 53mm x 30mm).



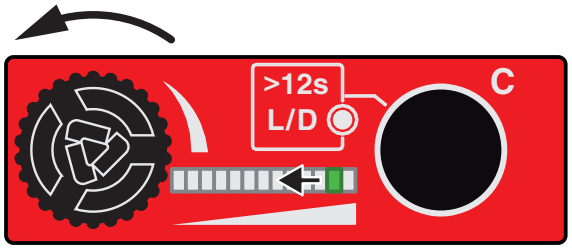
Adjusting the switching threshold

The sensitivity of contrast sensor KRT18B is set via the multiturn potentiometer.

Turning the spindle **clockwise increases the sensitivity** of the sensor. The signal on the bar graph is increased.



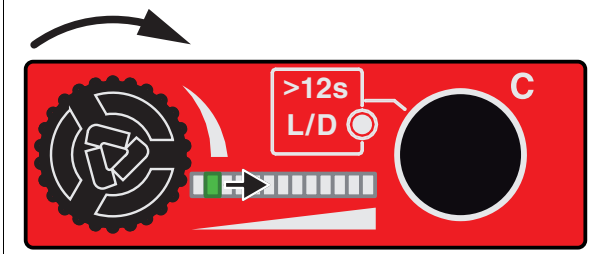
Turning the spindle **counterclockwise reduces the sensitivity** of the sensor. The signal on the bar graph is reduced.



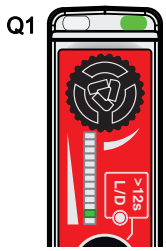
Adjustment procedure

The description is provided using the example of a dark mark on a light background. For the case of a light mark on a dark background, the terms mark and background simply need to be exchanged.

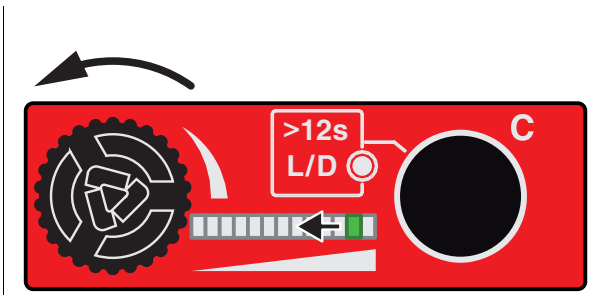
1. **Positioning the background under the light spot.**
   If the bar graph indicator is to the left of the middle position, turn the multiturn potentiometer clockwise until the sensor switches off (yellow indicator LED **Q1** off). Several full turns may be necessary here.



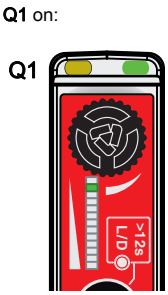
LED **Q1** off:



2. **Positioning the mark under the light spot.**
   If the bar graph indicator is to the right of the middle position, turn the multiturn potentiometer counterclockwise until the sensor switches on (yellow indicator LED **Q1** on). Several full turns may be necessary here.



LED **Q1** on:

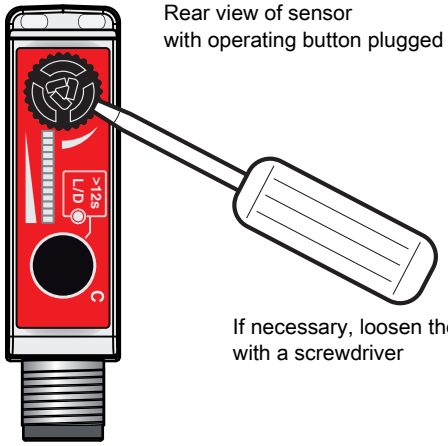


3. Switch between mark and background and watch the bar graph while doing so. Turn the multiturn potentiometer until the deflection between the mark and the background is symmetric about the middle of the bar graph.

4. If you are not able to find a setting that enables reliable detection, repeat the process with a different detection color.

Multiturn potentiometer

A removable operating button is plugged into the multiturn potentiometer at the factory. The setting of the contrast sensor can thereby be performed manually without the need for a tool. If this is not desired, the operating button can be pulled off. A screwdriver is then needed for the setting.

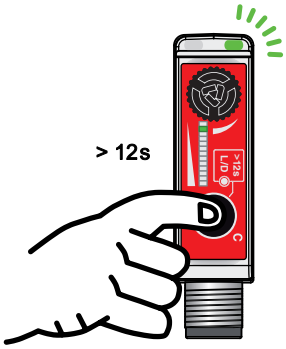


Rear view of sensor
with operating button plugged

If necessary, loosen then operating button
with a screwdriver

L/D – Light/dark switching

Press the **C** button longer than 12 s.



Only the green LED flashes.

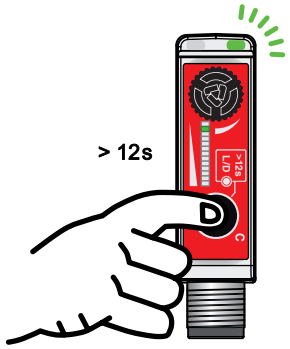
Release the button.

LED on =
OUT1 (Pin 4): PNP light switching, NPN dark switching
OUT2 (Pin 2)[1)]: PNP dark switching, NPN light switching

LED off =
OUT1 (Pin 4): PNP dark switching, NPN light switching
OUT2 (Pin 2)[1)]: PNP light switching, NPN dark switching

1) Only for devices without analog output

To change the setting again, push the button again for longer than 12 s and release.

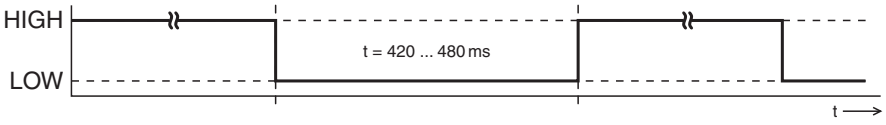


Sensor adjustments via the IN input (Pin 5)

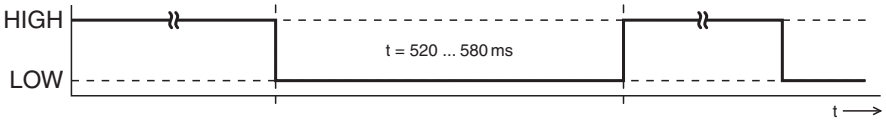
Signal level LOW ≤ 2V
Signal level HIGH ≥ (U_B-2V)

Light/dark switching

PNP light switching / light on, NPN dark switching / dark on (OUT1)



PNP dark switching / dark on, NPN light switching / light on (OUT1)



Locking all operational controls via the IN input (Pin 5)

A **static HIGH signal** (≥ 20 ms) at the **IN input** (Pin 5) locks all operational controls on the sensor if required, such that no manual operation is possible (e.g., protection from erroneous operation or manipulation).

If the input is not connected or if a static LOW signal is being applied, all operational controls are unlocked and can be operated freely.