en 02-2015/05   50127871-01

9mm

15 kHz
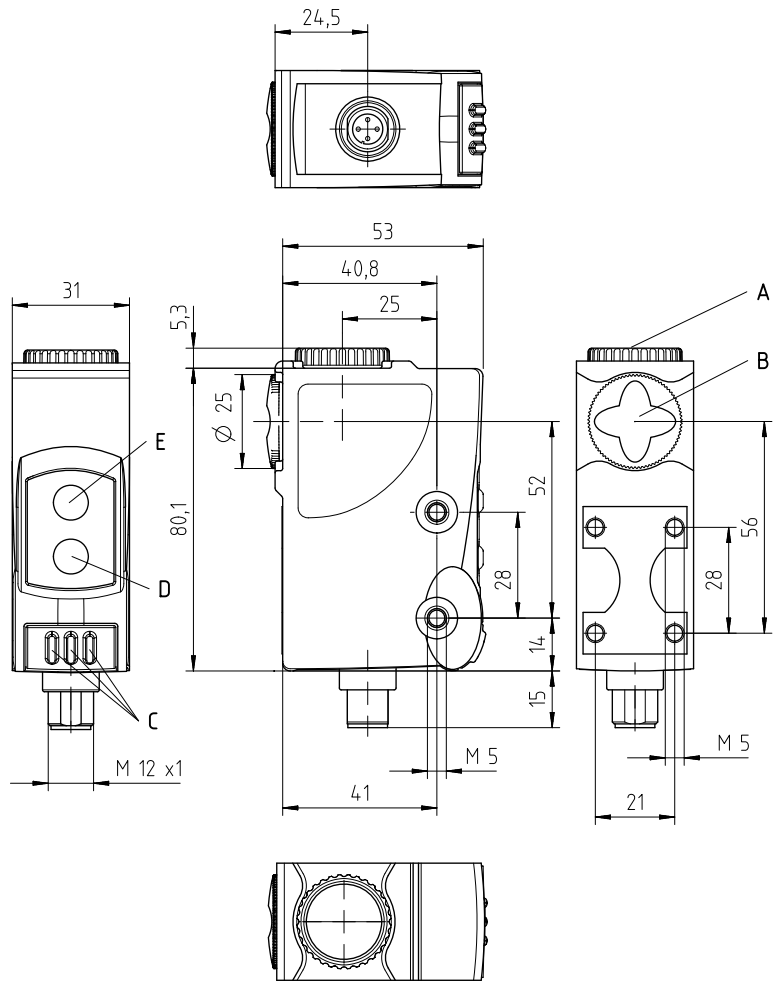
10 - 30 V DC

- Static teach-in
- RGB transmitter
- Response time 33µs
- Switching frequency 15kHz
- Switchable pulse stretching

CE c(UL)us LISTED

IEC 60947... IEC 60947... IP 67

Accessories:

(available separately)

- Cables with M12 connector (K-D …)
- Interchangeable lens:
  Glass 9mm: OB-09.G-KRT21M (50127842)
  Glass 18mm: OB-18.G-KRT21M (50127843)

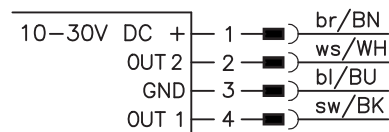We reserve the right to make changes • DS_KRT21M_en_50127871_01.fm

Dimensioned drawing
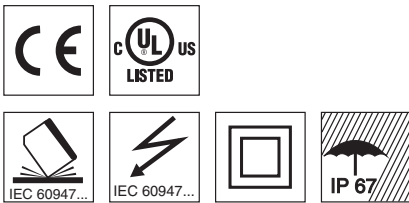

A   Changeable optics (optical outlet on head)
B   Dummy cable gland (optical outlet on front)
C   Indicator LEDs
D   Teach button BKGD
E   Teach button MARK

Electrical connection

Connector, 4-pin

10–30V DC +	1	br/BN
OUT 2	2	ws/WH
GND	3	bl/BU
OUT 1	4	sw/BK

Specifications

Optical data

Scanning range [1]		9 mm ± 3 mm (from front edge of lens)
Light spot dimensions	in RUN-Mode	1.5 mm x 5 mm (at a distance of 9 mm)
	in Teach-Mode	1.5 mm x 5 mm (at a distance of 9 mm)
Optical outlet		front or head (see dimensioned drawing)
Light spot orientation		vertical (see dimensioned drawing)
Light source [2]		LEDs (red, green, blue)
Wavelength		630 nm, 520 nm, 465 nm

Timing of the sensor

Switching frequency	15 kHz
Response time	33 µs
Delay before start-up	≤ 300 ms
Teach process	Static 2-point

Electrical data

Operating voltage U_B [3]		10 … 30 VDC (incl. residual ripple)
Residual ripple		≤ 15 % of U_B
Output/function	…/42…	pin 4: PNP/U_B if mark detected
		pin 2: NPN/GND if mark detected
Signal voltage high/low		≥ (U_B-2V)/≤ 2V
Output current		max. 100 mA
Open-circuit current		≤ 25 mA

Indicators

Green LED continuous light	ready
Green LED off	teach event active
Green LED flashing	teaching error
Green LED quickly flashing	overload of the switching output
Yellow LED continuous light	mark detected
Orange LED continuous light	pulse stretching active

Mechanical data

Housing	ABS
Front mount	M5, aluminum, penetration depth max. 6 mm, max. tightening torque = 2 Nm
Through-hole mounting	M5, aluminum, penetration depth max. 6 mm, max. tightening torque = 2 Nm
Optics cover	PMMA or glass
Weight	90 g
Connection type	M12 connector, 4-pin

Environmental data

Ambient temp. (operation/storage)	-10 °C … +55 °C / -20 °C … +70 °C
Protective circuit [4]	2, 3
VDE safety class	II
Degree of protection	IP 67
Light source	exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 [3] [5]

Options

Pulse stretching	20 ms, can be activated via keyboard

1) Scanning range: recommended range with performance reserve
2) Average life expectancy 100,000 h at an ambient temperature of 25 °C
3) For UL applications: for use in class 2 circuits according to NEC only
4) 2=polarity reversal protection, 3=short circuit protection for all transistor outputs
5) These sensors shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)
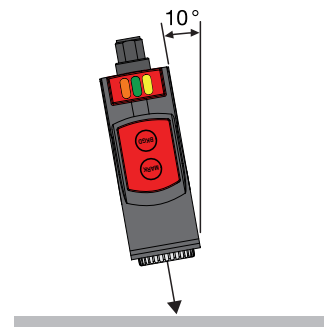
Tables

Diagrams

Remarks

Operate in accordance with 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 the intended use.

- When using an angled plug, the cable outlet is towards the optical outlet on the front

- With glossy objects, the sensor is to be fastened at an inclination of approx. 5 … 20° relative to the object surface.
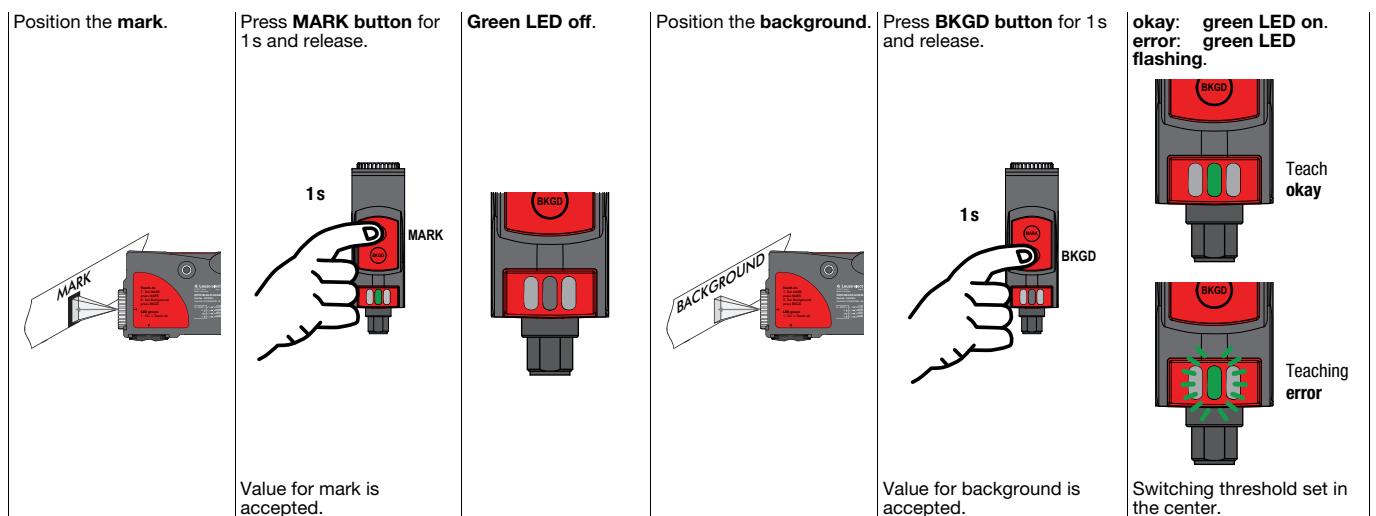
KRT21M	Multicolor contrast scanner

Order guide

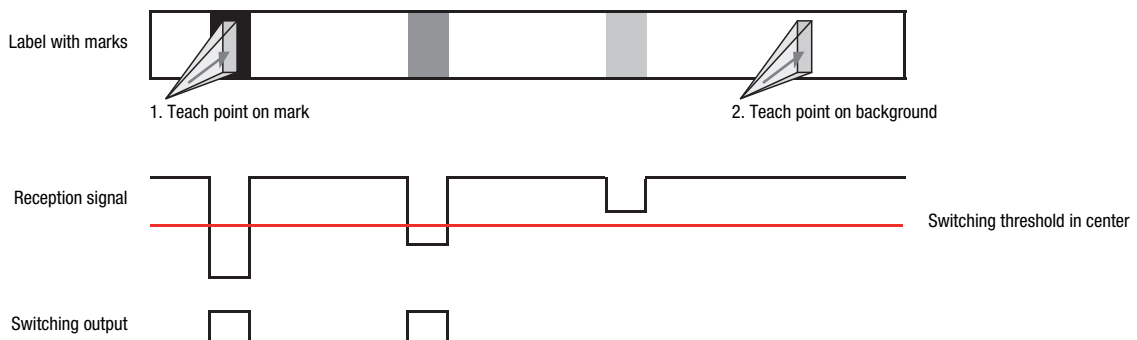| Selection table		Order code ➔	KRT21M-09.PL3/42-M12 Part no. 50127841
Equipment ⬇			
Transmitter color	RGB (red, green, blue)		●
Optical outlet	front		
	head		●
Light spot orientation	vertical		●
Output (OUT 1)	PNP transistor output		●
	NPN transistor output		
Output (OUT 2)	PNP transistor output		
	NPN transistor output		●
Teach-in method	static 2-point		●
Response time / switching frequency	33µs / 15kHz		●
Options	pulse stretching of 20ms can be activated by means of buttons		●

Static 2-point teach

Suitable for manual positioning of the marks.

Position the **mark**.	Press **MARK button** for 1s and release.	**Green LED off**.	Position the **background**.	Press **BKGD button** for 1s and release.	okay: **green LED on**. error: **green LED flashing**.
	1s MARK	BKGD	1s BKGD		BKGD Teach **okay** BKGD Teaching **error**
	Value for mark is accepted.			Value for background is accepted.	Switching threshold set in the center.

Switching threshold diagram

Static 2-point teach

Label with marks

1. Teach point on mark   2. Teach point on background

Reception signal

Switching threshold in center

Switching output

Pulse stretching option

The pulse stretching function extends the duration of the output pulse (output active) to 20 ms. This enables the detection of even very short switching pulses by the assigned control system.
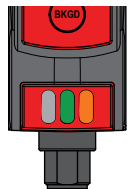
Activation of the pulse stretching function is signaled by illumination of the orange LED.
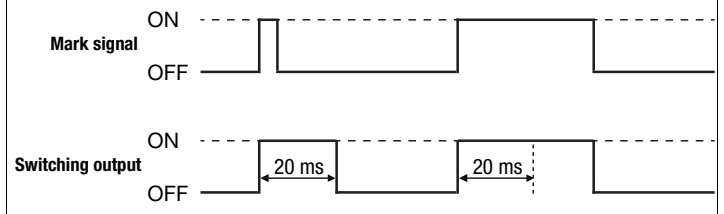
Switching-on pulse stretching:

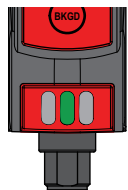| **Press the MARK button and BKGD button simultaneously** for 2s and then release.	**Orange LED illuminates** – pulse stretching **active**	Behavior of the switching output

Switching-off pulse stretching:

Press the MARK button and BKGD button simultaneously for 2s and then release.	**Orange LED off** – pulse stretching **not active**	Behavior of the switching output