

RKU318

Ultrasonic sensors with 1 switching output

en 01-2017/02 50135809



0 ... 400mm
0 ... 1600mm

10 - 30 V
DC

- Function largely independent of surface properties, ideal for detection of liquids, bulk materials, transparent media, ...
- Small dead zone at long scanning range
- Adjustment of the reflector distance can be taught
- NO/NC function reversible
- 1 switching output (PNP or NPN)
- **NEW** – Stable plastic design
- **NEW** – Temperature-compensated scanning range

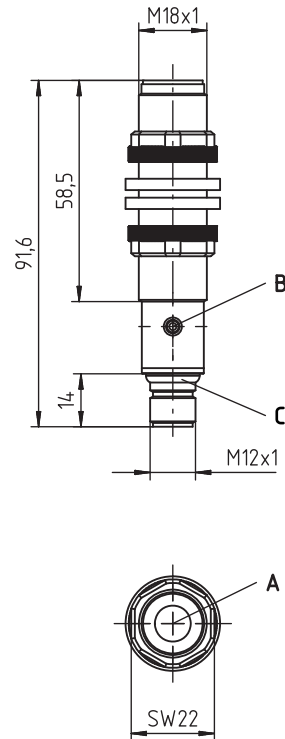


Accessories:

(available separately)

- Mounting systems
- Mounting adapter M18-M30:
BTX-D18M-D30 (Part no. 50125860)
- Cables with M12 connector
(KD ...)
- Teach adapter PA1/XTSX-M12
(Part no. 50124709)

Dimensioned drawing



- A** Active sensor surface
- B** Teach-in button
- C** Indicator diodes

Electrical connection

10-30 V DC +	1	BR/BN
n. c.	2	WS/WH
GND	3	BL/BU
OUT 1	4	SW/BK

We reserve the right to make changes • PAL_RKU318_400...1600_1SWO_en_50135809.fm

Technical data

Ultrasonic specifications

Operating range ¹⁾
 Reflector distance
 Object distance to background (reflector)
 Ultrasonic frequency
 Typ. opening angle
 Resolution
 Direction of beam
 Reproducibility
 Switching hysteresis
 Temperature drift

RKU318-400/...-M12

0 ... 400mm ²⁾
 100 ... 400mm
 ≥ 100mm
 300kHz
 8° ± 2°
 < 2mm
 Axial
 ± 0.5% ^{1) 4)}
 1% ³⁾
 ≤ 5% ⁵⁾

RKU318-1600/...-M12

0 ... 1600mm ³⁾
 250 ... 1600mm
 ≥ 250mm
 230kHz
 8° ± 2°
 < 2mm
 Axial
 ± 0.5% ^{1) 3)}
 1% ³⁾
 ≤ 5% ⁴⁾

Timing

Switching frequency
 Response time
 Readiness delay

8Hz
 62ms
 < 500ms

1Hz
 500ms
 < 500ms

Electrical data

Operating voltage U_B ⁶⁾
 Residual ripple
 Open-circuit current
 Switching output

10 ... 30V DC (incl. ± 5% residual ripple)
 ± 5% of U_B
 ≤ 50mA
 1 PNP transistor switching output
 1 NPN transistor switching output
 NO (normally open), preset
 Max. 100mA
 Teach-in button 2 ... 7s
 Teach-in button > 12s

.../4...

.../2...

Function

Output current
 Setting the reflector distance
 Changeover NO/NC

Indicators

Yellow LED
 Flashing yellow and green LEDs
 Green LED

OUT1: object detected
 Teach-in / teaching error
 Object within the scanning range

Mechanical data

Housing
 Active surface

Plastic (PBT)
 Epoxy resin, glass fiber reinforced
 70g
 Piezoceramic ⁷⁾
 M12 connector, 4-pin
 Any

Weight
 Ultrasonic transducer
 Connection type
 Fitting position

Environmental data

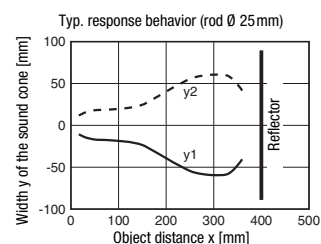
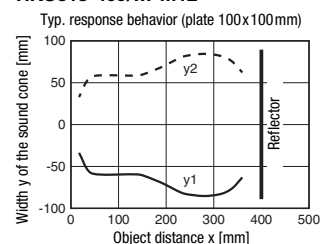
Ambient temp. (operation/storage)
 Protective circuit ⁸⁾
 VDE protection class
 Degree of protection
 Standards applied
 Certifications

-20° ... +70°C/-20° ... +70°C
 1, 2, 3
 III
 IP 67
 EN 60947-5-2
 UL 508, CSA C22.2 No.14-13 ^{6) 9)}

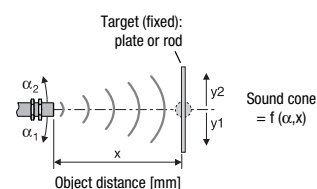
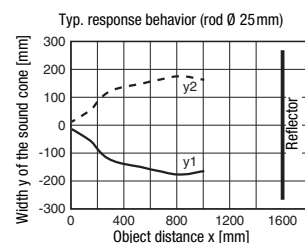
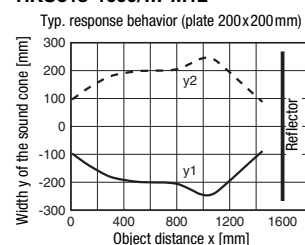
- 1) At 20°C
- 2) Target: 100mm x 100mm plate
- 3) Target: 200mm x 200mm plate
- 4) From end value
- 5) Over the temperature range -20°C ... +70°C
- 6) For UL applications: use is permitted exclusively in Class 2 circuits according to NEC
- 7) The ceramic material of the ultrasonic transducer contains lead zirconium titanate (PZT)
- 8) 1=short-circuit and overload protection, 2=polarity reversal protection, 3=wire break and inductive protection
- 9) These proximity switches 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)

Diagrams

RKU318-400/...-M12



RKU318-1600/...-M12



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.

RKU318

Ultrasonic sensors with 1 switching output

Part number code

R	K	U	3	1	8	-	1	6	0	0	.	3	/	4	X	-	M	1	2
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Operating principle

HTU	Ultrasonic sensor, scanning principle, with background suppression
DMU	Ultrasonic sensor, distance measurement
RKU	Ultrasonic sensor, retro-reflective ultrasonic sensor

Series

318	318 series, cylindrical short M18 design
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Operating ranges in mm

400	0 ... 400
1600	0 ... 1600

Equipment (optional)

.3	Teach button on the sensor
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Pin assignment of connector pin 4 / black cable wire (OUT1)

4	PNP output, NO contact preset
P	PNP output, NC contact preset
2	NPN output, NO contact preset
N	NPN output, NC contact preset
C	Analog output 4 ... 20 mA
V	Analog output 0 ... 10V

Pin assignment of connector pin 2 / white cable wire (Teach-IN)

T	Teach input
X	Not assigned (n. c.)

Connection technology

M12	M12 connector, 4-pin
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Order guide

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

	Designation	Part no.
Operating range / switching output / teach-in		
0 ... 400 mm / PNP / teach button	RKU318-400.3/4X-M12	50136094
0 ... 400 mm / NPN / teach button	RKU318-400.3/2X-M12	50136095
0 ... 1600 mm / PNP / teach button	RKU318-1600.3/4X-M12	50136096
0 ... 1600 mm / NPN / teach button	RKU318-1600.3/2X-M12	50136097

Device functions and indicators

The sensor detects objects from 0 mm to the reflector distance less the dead zone.
The dead zone is max. 10% of the selected reflector distance.

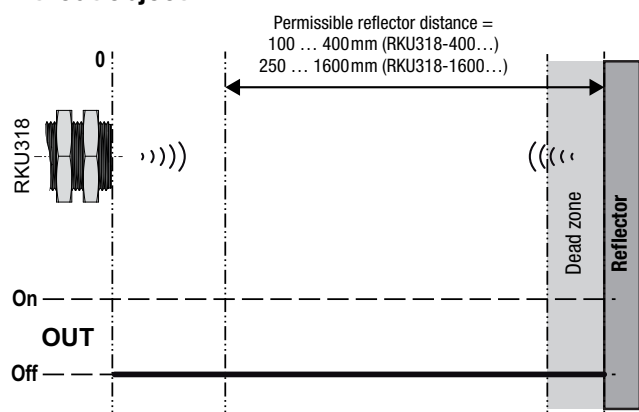


Note!

The switching behavior is not defined in the dead zone.

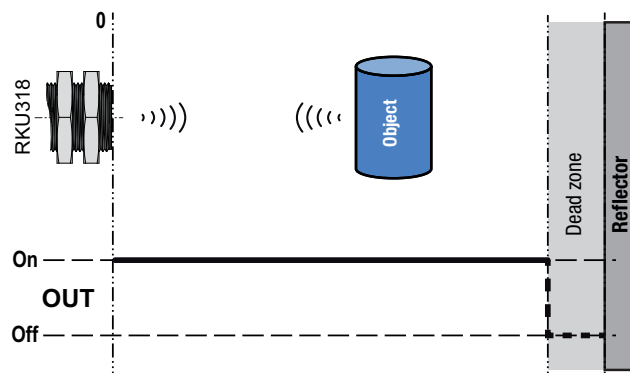
All settings on the sensor are taught-in via the **teach button**. Device status and switching states are indicated as follows by means of a LED:

Without object



Switching output **OUT 1 = not active (Off)**
Green **LED** is **on**

With object



Switching output **OUT 1 = active (On)**
Green **LED** is **off**

Adjusting the reflector distance via the teach button

The reflector distance of the sensor is set to 400mm or 1600mm on delivery.

Through a simple teach event, the reflector distance can be taught in within the respective operating range. This is performed via the teach button, which can also be used to easily changeover the output function from NO contact to NC contact.

Teach button
Place the reflector at the desired position and perform the teach event
If the reflector is at the desired position, press the teach button for 2 ... 7 s until the yellow LED flashes briefly - release the button. Green LED on. The sensor now detects objects that are located in the sound path between sensor and reflector. When an object is detected, the green LED is on.

Adjusting the switching function (NC/NO) via the teach button

The switching function of the sensor is set to normally open (NO) on delivery.

The output function can be switched from NO contact (NO - normally open) to NC contact (NC - normally closed) and vice versa. If the switching function is changed, the switching output is changed to the opposite state (toggled).

Changeover of the switching function
1. To change the switching function, press the teach button for longer than 12s. The current state of output OUT1 is frozen during the adjustment process.
2. The green and yellow LEDs flash alternately at 2Hz. The switching function was changed over.

Resetting to factory settings

The sensor can be reset to the factory setting (reflector distance at 400 mm or 1600 mm).

Resetting to factory settings
1. When switching on the supply voltage (during power-on), press the teach button for > 5s.
2. Release the button. The green and yellow LEDs flash alternately and very quickly for a brief time. The sensor was reset to the factory setting: reflector distance 400 mm or 1600 mm.