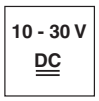
RKU318

Ultrasonic sensors with 1 switching output

en 01-2017/02 50135809

0 … 400 mm
0 … 1600 mm



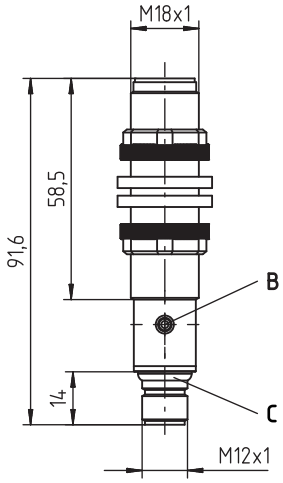
- Function largely independent of surface properties, ideal for detection of liquids, bulk materials, transparent media, …
- Small dead zone at long scanning range
- Adjustment of the reflector distance can be taught
- NO/NC function reversible
- 1 switching output (PNP or NPN)
- **NEW** – Stable plastic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

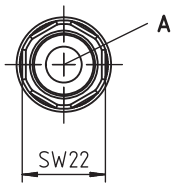
Accessories:

(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)

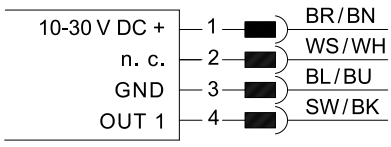
Dimensioned drawing





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

Electrical connection



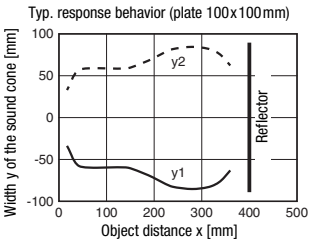
Technical data

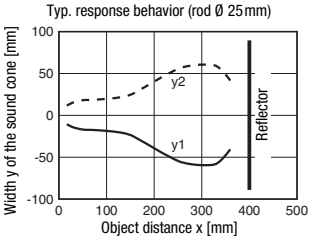
Ultrasonic specifications		RKU318-400/…-M12	RKU318-1600/…-M12
Operating range [1]		0 … 400mm [2]	0 … 1600mm [3]
Reflector distance		100 … 400mm	250 … 1600mm
Object distance to background (reflector)		≥ 100mm	≥ 250mm
Ultrasonic frequency		300kHz	230kHz
Typ. opening angle		8° ± 2°	8° ± 2°
Resolution		< 2mm	< 2mm
Direction of beam		Axial	Axial
Reproducibility		± 0.5% [1] [4]	± 0.5% [1] [3]
Switching hysteresis		1% [3]	1% [3]
Temperature drift		≤ 5% [5]	≤ 5% [4]
Timing			
Switching frequency		8Hz	1Hz
Response time		62ms	500ms
Readiness delay		< 500ms	< 500ms
Electrical data			
Operating voltage U_B [6]		10 … 30V DC (incl. ± 5% residual ripple)	
Residual ripple		± 5% of U_B	
Open-circuit current		≤ 50mA	
Switching output	…/4…	1 PNP transistor switching output	
	…/2…	1 NPN transistor switching output	
Function		NO (normally open), preset	
Output current		Max. 100mA	
Setting the reflector distance		Teach-in button 2 … 7s	
Changeover NO/NC		Teach-in button > 12s	
Indicators			
Yellow LED		OUT1: object detected	
Flashing yellow and green LEDs		Teach-in / teaching error	
Green LED		Object within the scanning range	
Mechanical data			
Housing		Plastic (PBT)	
Active surface		Epoxy resin, glass fiber reinforced	
Weight		70g	
Ultrasonic transducer		Piezoceramic [7]	
Connection type		M12 connector, 4-pin	
Fitting position		Any	
Environmental data			
Ambient temp. (operation/storage)		-20° … +70°C/-20° … +70°C	
Protective circuit [8]		1, 2, 3	
VDE protection class		III	
Degree of protection		IP 67	
Standards applied		EN 60947-5-2	
Certifications		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)

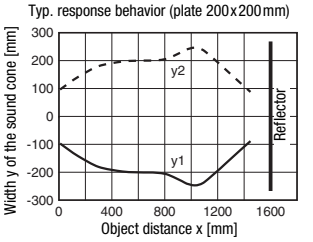
Diagrams

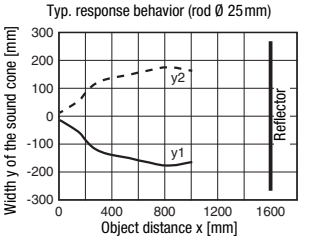
RKU318-400/…-M12

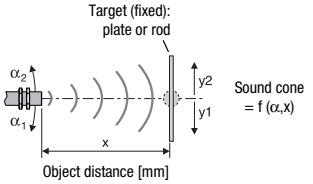




RKU318-1600/…-M12







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

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

Operating ranges in mm

400	0 … 400
1600	0 … 1600

Equipment (optional)

.3	Teach button on the sensor

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 … 10 V

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

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

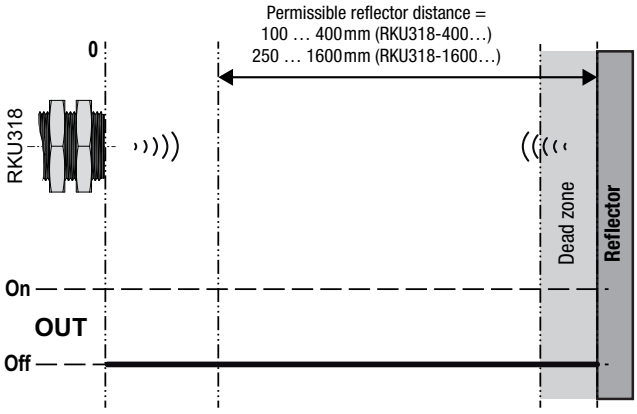
Device functions and indicators

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.

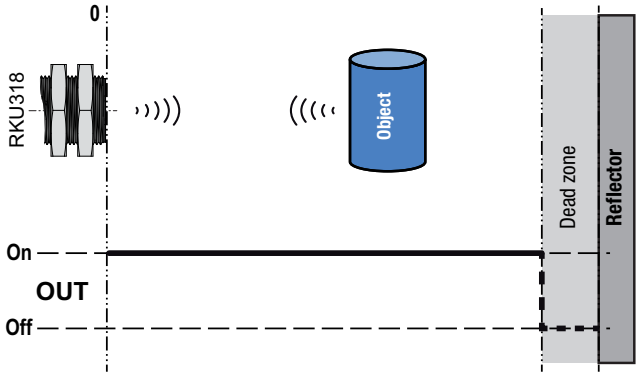
All settings on the sensor are taught-in via the **teach button**. Device status and switching states are indicated as follows by means of a LED:

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.