HTU418B…W   Ultrasonic sensors, angled 90° with 2 switching outputs

en 02-2016/05 50129816-01

25 … 400 mm
150 … 1300 mm

15 - 30 V DC

- Function largely independent of surface properties, ideal for detection of liquids, bulk materials, transparent media, …
- Sound exit less than 90° to the longitudinal axis
- Small dead zone at long scanning range
- Adjustment of the switching point can be taught for each switching output
- NO/NC function reversible
- 2 switching outputs (PNP)

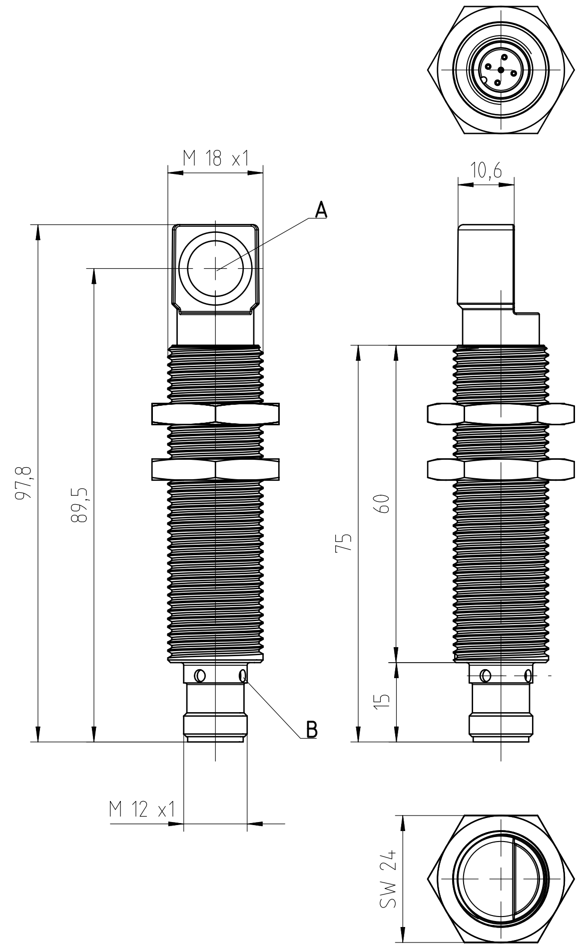
c UL us LISTED · IP 67 · IEC 60947... · IEC 60947... · IP 68

Accessories:

(available separately)

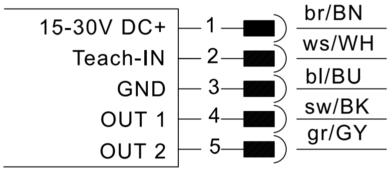
- Mounting systems
- Mounting adapter M18-M30: BTX-D18M-D30 (Part no. 50125860)
- Cables with M12 connector (K-D …)
- Teach adapter PA1/XTSX-M12 (Part no. 50124709)

Dimensioned drawing



A Active sensor surface
B Indicator diodes

Electrical connection



Specifications

Ultrasonic specifications	HTU418B-400.W/4T4…	HTU418B-1300.W/4T4…
Scanning range [1]	25 … 400mm [2]	150 … 1300mm [3]
Adjustment range	25 … 400mm	150 … 1300mm
Ultrasonic frequency	310kHz	200kHz
Typ. opening angle	9°	16°
Resolution	1mm	1mm
Direction of beam	axial	axial
Reproducibility	± 0.15% of end value [1]	± 0.15% of end value [1]
Switching hysteresis	5mm [1]	10mm [1]
Temperature drift	0.17%/K	0.17%/K
Timing		
Switching frequency	7Hz	8Hz
Response time	71ms	62ms
Delay before start-up	< 300ms	< 300ms

Electrical data	
Operating voltage U_B [4]	15 … 30V DC (incl. ± 10% residual ripple)
Residual ripple	± 10% of U_B
Open-circuit current	≤ 50mA
Switching output	2x PNP transistor
Function	2 x NO contact, reversible
Output current	max. 150mA
Switching range adjustment	teach-in (pin 2): for OUT1: connect to GND for 2 … 7s for OUT2: connect to GND for 7 … 12s
Changeover NO/NC	teach-in (pin 2): for OUT1: connect to U_B for 2 … 7s for OUT2: connect to U_B for 7 … 12s
Indicators	
Yellow LED	OUT1: object detected
Yellow LED, flashing	teach-in / teaching error
Green LED	object within the scanning range
Mechanical data	
Housing	all metal - brass, nickel-plated
Weight	50g
Ultrasonic transducer	piezoceramic [5]
Connection type	M12 connector, 5-pin
Fitting position	any
Environmental data	
Ambient temp. (operation/storage)	-25°C … +70°C/-30°C … +85°C
Protective circuit [6]	1, 2, 3
VDE safety class	III
Degree of protection	IP 67 and IP 68
Standards applied	EN 60947-5-2
Certifications	UL 508, C22.2 No.14-13 [4] [7] [8]

1) At 20°C
2) Target: 20mm x 20mm plate
3) Target: 100mm x 100mm plate
4) For UL applications: for use in class 2 circuits according to NEC only
5) The ceramic material of the ultrasonic transducer contains lead zirconium titanate (PZT)
6) 1=short-circuit and overload protection, 2=polarity reversal protection, 3=wire break and inductive protection
7) 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)
8) Ambient temperature 85°C. Use same voltage supply for all circuits.

Remarks

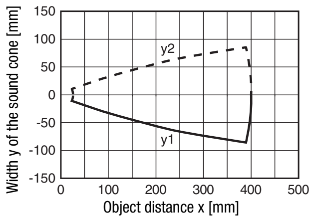
Operate in accordance with intended use!

- 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.

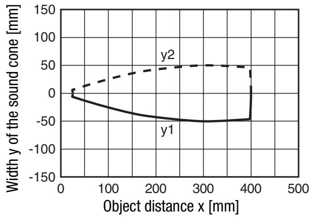
Diagrams

HTU418B-400.W/…-M12

Typ. response behavior (plate 20x20mm)

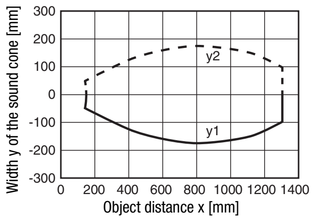


Typ. response behavior (rod Ø 27mm)

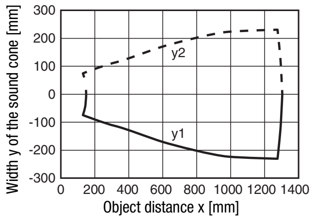


HTU418B-1300.W/…-M12

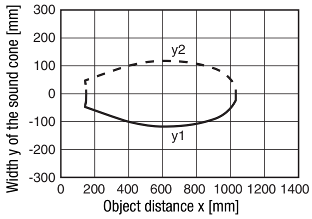
Typ. response behavior (plate 20x20mm)

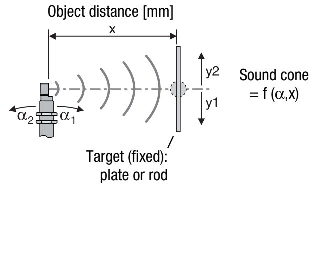


Typ. response behavior (plate 100x100mm)



Typ. response behavior (rod Ø 27mm)





HTU418B…W — Ultrasonic sensors, angled 90° with 2 switching outputs

Part number code

H	T	U	4	1	8	B	-	1	3	0	0	.	W	/	4	T	4	-	M	1	2

Operating principle

HTU	Ultrasonic sensor, scanning principle, with background suppression

Series

418B	418B Series, cylindrical M18 construction

Scanning range in mm

400	25 … 400
1300	150 … 1300

Equipment (optional)

W	Design with angle head of 90°

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

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

T	Teach input

Pin assignment of connector pin 5 / gray cable wire (OUT2)

4	PNP output, NO contact preset
P	PNP output, NC contact preset
2	NPN output, NO contact preset
N	NPN output, NC contact preset

Connection technology

M12	M12 connector, 5-pin

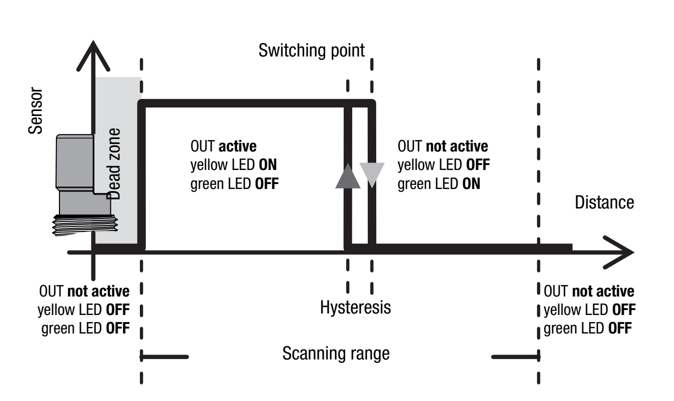
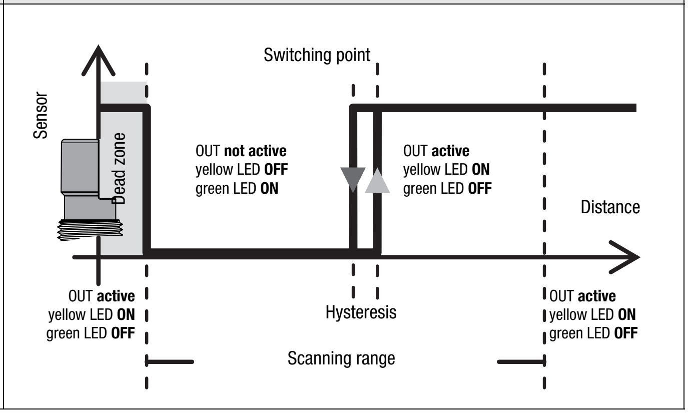
Order guide

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

	Designation	Part no.
Scanning range		
25 … 400 mm	HTU418B-400.W/4T4-M12	50129826
150 … 1300 mm	HTU418B-1300.W/4T4-M12	50129827

Device functions and indicators

All settings on the sensor are taught-in via the **Teach-IN** input. Device status and switching states are indicated as follows by means of a yellow and green LED:

Switching behavior NO contact	Switching behavior NC contact
	

Notice!
In measurement operation, the yellow and green LED only indicate the behavior of output OUT1.
The behavior of output OUT2 is not indicated.

Adjusting the switching points via the teach input

The switching points of the sensor outputs **OUT1**/**OUT2** are set to 400mm or 1000mm on delivery.

By means of a simple teach event, the two switching points can be individually taught to an arbitrary distance within the scanning range. The Leuze **PA1/XTSX-M12** teach adapter can be used for this purpose. The adapter can also be used to easily switch the output function from NO contact to NC contact.

1-point teach of output OUT1	1-point teach of output OUT2
1. Place object at desired switching distance.	**1. Place** object at desired switching distance.
2. For the adjustment of **OUT1**, **connect** input **Teach-IN** to **GND** for **2 … 7s** (Leuze teach adapter: position "Teach-GND"). The current state of output **OUT1** is frozen during the teach event.	**2.** For the adjustment of output **OUT2**, **connect** input **Teach-IN** to **GND** for **7 … 12s** (Leuze teach adapter: position "Teach-GND"). The current state of output **OUT2** is frozen during the teach event.
3. The **yellow LED flashes at 3Hz and is then ON**. The current object distance has been taught as the new switching point.	**3.** The **yellow LED flashes at 3Hz**. The current object distance has been taught as the new switching point.
4. Error-free teach: switching behavior according to the diagram shown above. **Faulty teach** (object may be too close or too far away – please note scanning range)**:** **yellow LED flashes at 5Hz** until an error-free teach event is performed. Output **OUT1** is inactive as long as there is a teach error.	**4.** Error-free teach: switching behavior according to the diagram shown above. **Faulty teach** (object may be too close or too far away – please note scanning range)**:** **yellow LED flashes at 5Hz** until an error-free teach event is performed. Output **OUT2** is inactive as long as there is a teach error.

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

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

If the switching function is changed, the switching output is changed to the opposite state (toggled).

Changeover of the switching function of output OUT1	Changeover of the switching function of output OUT2
1. To change the switching function, **connect** input **Teach-IN** to $\mathbf{U_B}$ for **2 … 7s** (Leuze teach adapter: position "Teach-U_B"). The current state of output **OUT1** is frozen while the adjustment is made.	**1.** To change the switching function, **connect** input **Teach-IN** to $\mathbf{U_B}$ for **7 … 12s** (Leuze teach adapter: position "Teach-U_B). The current state of output **OUT2** is frozen while the adjustment is made.
2. The **green and yellow LEDs flash alternately at 2Hz**. The switching function was changed over. The switching behavior corresponds to the diagram shown above.	**2.** The **green and yellow LEDs flash alternately at 5Hz**. The switching function was changed over. The switching behavior corresponds to the diagram shown above.

Notice!
Please note that **the switching point is taught when GND is connected** and **the output function is reversed when $\mathbf{U_B}$ is connected**. **If no sensor action is desired, pin 2 must remain unconnected**!