

# HTU418B...W

## Ultrasonic sensors, angled 90° with 2 switching outputs

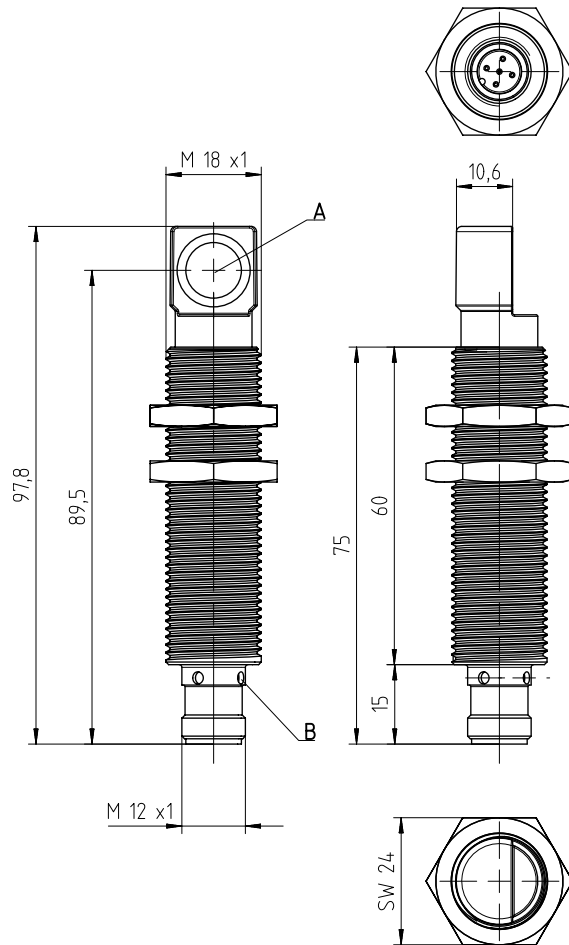
### Dimensioned drawing



25 ... 400mm  
150 ... 1300mm

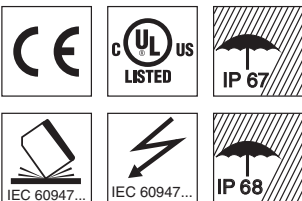


- Function largely independent of surface properties, ideal for detection of liquids, bulk materials, transparent media, ...
- Sound exit less than 90° to the longitudinal axis
- Small dead zone at long scanning range
- Adjustment of the switching point can be taught for each switching output
- NO/NC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



- A Active sensor surface  
B Indicator diodes

### Electrical connection



### 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)

15-30V DC+	1	br/BN
Teach-IN	2	ws/WH
GND	3	bl/BU
OUT 1	4	sw/BK
OUT 2	5	gr/GY

## Specifications

### Ultrasonic specifications

Scanning range <sup>1)</sup>  
Adjustment range  
Ultrasonic frequency  
Typ. opening angle  
Resolution switching output  
Direction of beam  
Reproducibility  
Switching hysteresis  
Temperature drift

### Timing

Switching frequency  
Response time  
Delay before start-up

### Electrical data

Operating voltage  $U_B$  <sup>4)</sup>  
Residual ripple  
Open-circuit current  
Switching output  
Function  
Output current  
Switching range adjustment

Changeover NO/NC

### Indicators

Yellow LED  
Yellow LED, flashing  
Green LED

### Mechanical data

Housing  
Weight  
Ultrasonic transducer  
Connection type  
Fitting position

### Environmental data

Ambient temp. (operation/storage)  
Protective circuit <sup>6)</sup>  
VDE safety class  
Degree of protection  
Standards applied  
Certifications

- 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.

### HTU418B-400.W/4T4...

25 ... 400mm <sup>2)</sup>  
25 ... 400mm  
310kHz  
9°  
0.5mm  
axial  
 $\pm 0.15\%$  of end value <sup>1)</sup>  
5mm <sup>1)</sup>  
0.17%/K

7Hz  
71ms  
< 300ms

15 ... 30V DC (incl.  $\pm 10\%$  residual ripple)  
 $\pm 10\%$  of  $U_B$   
 $\leq 50$ mA  
2x PNP transistor  
2 x NO contact, reversible  
max. 150mA  
teach-in (pin 2):  
for OUT1: connect to GND for 2 ... 7s  
for OUT2: connect to GND for 7 ... 12s  
teach-in (pin 2):  
for OUT1: connect to  $U_B$  for 2 ... 7s  
for OUT2: connect to  $U_B$  for 7 ... 12s

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

all metal - brass, nickel-plated  
50g  
piezoceramic <sup>5)</sup>  
M12 connector, 5-pin  
any

-25°C ... +70°C/-30°C ... +85°C  
1, 2, 3  
III  
IP 67 and IP 68  
EN 60947-5-2  
UL 508, C22.2 No.14-13 <sup>4)</sup> <sup>7)</sup> <sup>8)</sup>

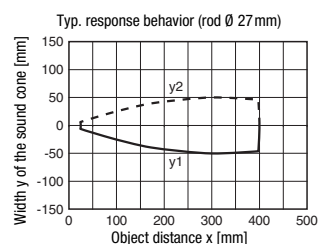
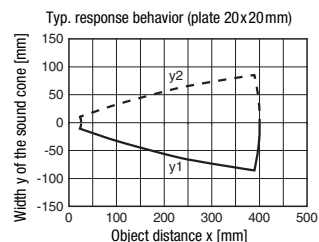
### HTU418B-1300.W/4T4...

150 ... 1300mm <sup>3)</sup>  
150 ... 1300mm  
200kHz  
16°  
1mm  
axial  
 $\pm 0.15\%$  of end value <sup>1)</sup>  
10mm <sup>1)</sup>  
0.17%/K

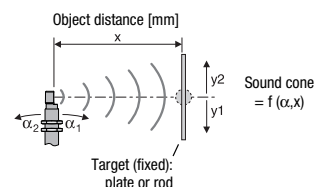
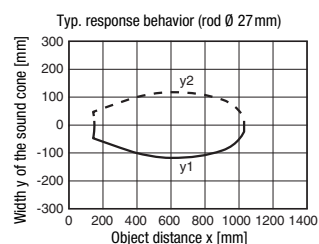
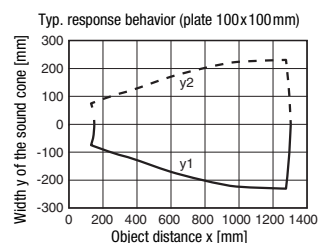
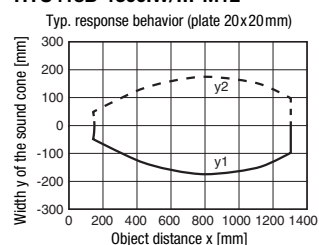
8Hz  
62ms  
< 300ms

## Diagrams

### HTU418B-400.W/...-M12



### HTU418B-1300.W/...-M12



## 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.

## 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
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#### 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

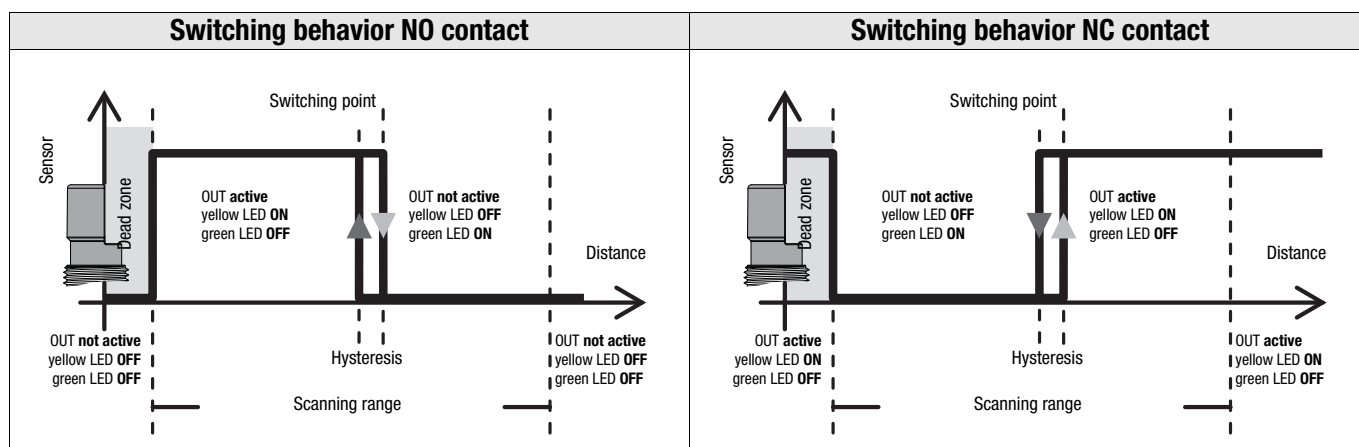
### Order guide

The sensors listed here are preferred types; current information at [www.leuze.com](http://www.leuze.com).

	Designation	Part no.
<b>Scanning range</b>		
25 ... 400mm	HTU418B-400.W/4T4-M12	50129826
150 ... 1300mm	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:



### 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
<b>1. Place</b> object at desired switching distance. <b>2. For the adjustment of OUT1, connect input Teach-IN to GND for 2 ... 7s</b> (Leuze teach adapter: position "Teach-GND"). The current state of output <b>OUT1</b> is frozen during the teach event. <b>3. The yellow LED flashes at 3Hz and is then ON.</b> The current object distance has been taught as the new switching point. <b>4. Error-free teach:</b> switching behavior according to the diagram shown above. <b>Faulty teach</b> (object may be too close or too far away – please note scanning range): <b>yellow LED flashes at 5Hz</b> until an error-free teach event is performed. Output <b>OUT1</b> is inactive as long as there is a teach error.	<b>1. Place</b> object at desired switching distance. <b>2. For the adjustment of output OUT2, connect input Teach-IN to GND for 7 ... 12s</b> (Leuze teach adapter: position "Teach-GND"). The current state of output <b>OUT2</b> is frozen during the teach event. <b>3. The yellow LED flashes at 3Hz.</b> The current object distance has been taught as the new switching point. <b>4. Error-free teach:</b> switching behavior according to the diagram shown above. <b>Faulty teach</b> (object may be too close or too far away – please note scanning range): <b>yellow LED flashes at 5Hz</b> until an error-free teach event is performed. Output <b>OUT2</b> 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
<b>1. To change the switching function, connect input Teach-IN to U<sub>B</sub> for 2 ... 7s</b> (Leuze teach adapter: position "Teach-U <sub>B</sub> "). The current state of output <b>OUT1</b> is frozen while the adjustment is made. <b>2. The green and yellow LEDs flash alternately at 2Hz.</b> The switching function was changed over. The switching behavior corresponds to the diagram shown above.	<b>1. To change the switching function, connect input Teach-IN to U<sub>B</sub> for 7 ... 12s</b> (Leuze teach adapter: position "Teach-U <sub>B</sub> "). The current state of output <b>OUT2</b> is frozen while the adjustment is made. <b>2. The green and yellow LEDs flash alternately at 5Hz.</b> 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 U<sub>B</sub> is connected. If no sensor action is desired, pin 2 must remain unconnected!**