

# HTU418B

## STANDARD ultrasonic sensors with 2 switching outputs

en 05-2017/02 50124995

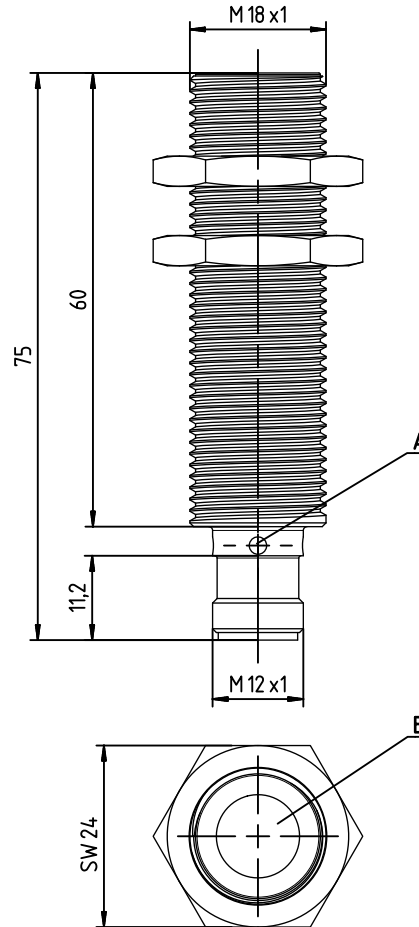


25 ... 400mm  
150 ... 1300mm



- Largely surface-independent function, ideal for the detection of liquids, bulk materials, transparent media, ...
- Small dead zone at long range
- Adjustment of the switching point can be taught for each switching output
- NO/NC function reversible
- 2 switching outputs (PNP)
- **NEW** – Stable all-metal design

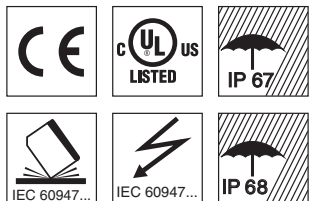
### Dimensioned drawing



- A Indicator diodes  
B Active sensor surface

### Electrical connection

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



### 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)

We reserve the right to make changes • PAL\_HTU418B4T4\_en\_50124995.fm

## 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: plate 20mm x 20mm
- 3) Target: plate 100mm x 100mm
- 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 supply source for all circuits.

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

25 ... 400mm <sup>2)</sup>  
25 ... 400mm  
310kHz  
9°  
0.5mm  
axial  
 $\pm 0.15\%$  of full scale 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 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>

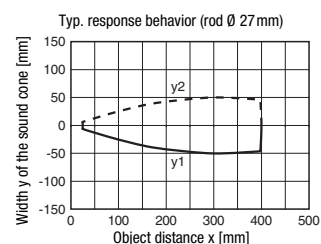
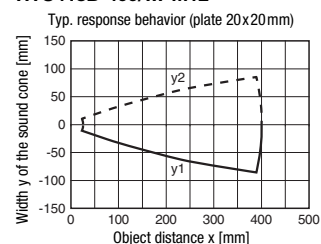
### HTU418B-1300/4T4...

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

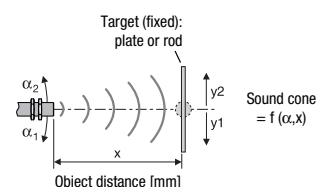
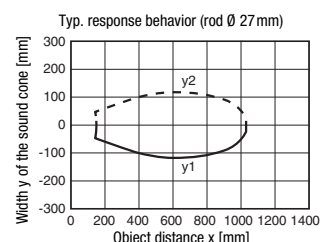
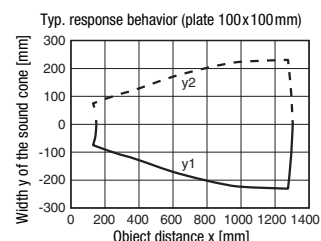
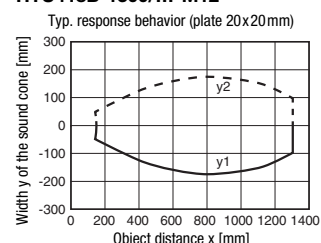
8Hz  
62ms  
< 300ms

## Diagrams

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



### HTU418B-1300/...-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

## STANDARD ultrasonic sensors with 2 switching outputs

### Part number code

H	T	U	4	1	8	B	-	1	3	0	0	.	X	3	/	4	T	4	-	M	1	2
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#### Operating principle

**HTU** Ultrasonic sensor, scanning principle, with background suppression

**DMU** Ultrasonic sensor, distance measurement

#### Series

**418B** 418B Series, cylindrical M18 construction

#### Scanning range in mm

**400** 25 ... 400

**1300** 150 ... 1300

#### Equipment (optional)

**X** "Advanced" design

**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

**L** IO-Link communication or push-pull (SIO)

#### 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

**V** Analog voltage output 1 ... 10V

**C** Analog current output 4 ... 20mA

**X** Connection not assigned (n. c. - not connected)

#### Connection technology

**M12** M12 connector, 5-pin

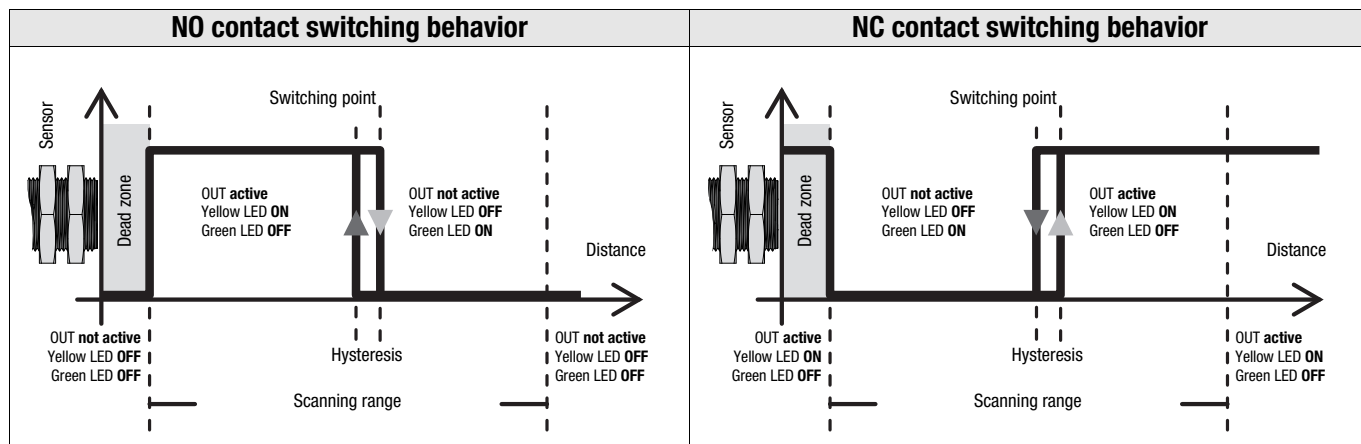
## Order guide

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-400/4T4-M12	50124268
150 ... 1300mm	HTU418B-1300/4T4-M12	50124272

## Device functions and indicators

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



### 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 output <b>OUT1</b> , connect input <b>Teach-IN</b> to <b>GND</b> for <b>2 ... 7s</b> (Leuze teach adapter: position "Teach-GND"). The current state of output <b>OUT1</b> is frozen during the teach event.	2. For the adjustment of output <b>OUT2</b> , connect input <b>Teach-IN</b> to <b>GND</b> for <b>7 ... 12s</b> (Leuze teach adapter: position "Teach-GND"). The current state of output <b>OUT2</b> is frozen during the teach event.
3. The <b>yellow LED flashes at 3Hz</b> and then <b>remains on</b> . The current object distance has been taught as the new switching point.	3. The <b>yellow LED flashes at 3Hz</b> . The current object distance has been taught as the new switching point.
4. Error-free teach: 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. The output <b>OUT1</b> is inactive as long as there is a teach error.	4. Error-free teach: 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. The 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
1. To change the switching function, connect input <b>Teach-IN</b> to <b>U<sub>B</sub></b> for <b>2 ... 7s</b> (Leuze teach adapter: position "Teach-U <sub>B</sub> "). The current state of output <b>OUT1</b> remains frozen while the adjustment is performed.	1. To change the switching function, connect input <b>Teach-IN</b> to <b>U<sub>B</sub></b> for <b>7 ... 12s</b> (Leuze teach adapter: position "Teach-U <sub>B</sub> "). The current state of output <b>OUT2</b> remains frozen while the adjustment is performed.
2. The <b>green and yellow LED flash alternately at 2Hz</b> . The switching function has been reversed. The switching behavior corresponds to the diagram shown above.	2. The <b>green and yellow LED flash alternately at 5Hz</b> . The switching function has been reversed. 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!