HTU418B STANDARD ultrasonic sensors with 2 switching outputs

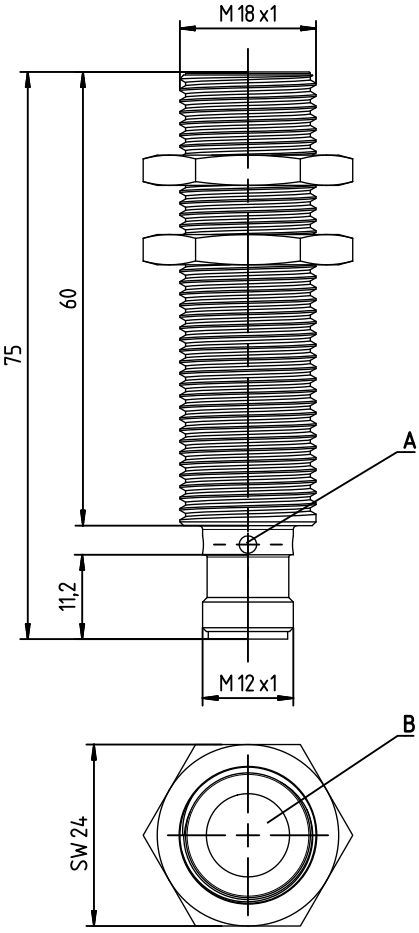
en 04-2014/11 50124995

25 … 400 mm
150 … 1300 mm

15 - 30 V DC

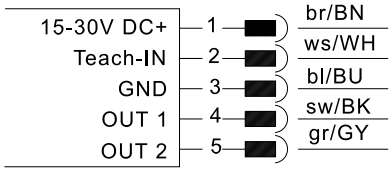
- Largely surface-independent function, ideal for the detection of liquids, bulk materials, transparent media, …
- Small dead zone at long range
- Adjustment of the switching point can be taught for each switching output
- NO/NC function reversible
- 2 switching outputs (PNP)
- **NEW** – Stable all-metal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

Dimensioned drawing



A Indicator diodes
B Active sensor surface

Electrical connection



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)

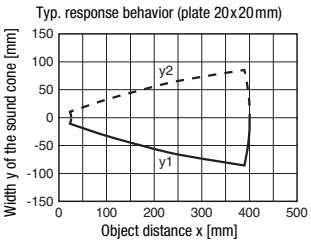
Specifications

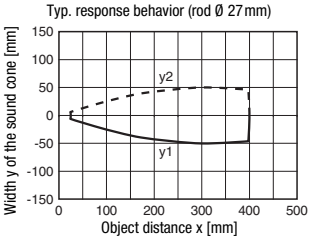
Ultrasonic specifications	HTU418B-400/4T4…	HTU418B-1300/4T4…
Scanning range [1]	25 … 400mm [2]	150 … 1300mm [3]
Adjustment range	25 … 400mm	150 … 1300mm
Ultrasonic frequency	310kHz	200kHz
Typ. opening angle	9°	16°
Resolution	1mm	1mm
Direction of beam	axial	axial
Reproducibility	± 0.15% of full scale value [1]	± 0.15% of full scale 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 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: 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.

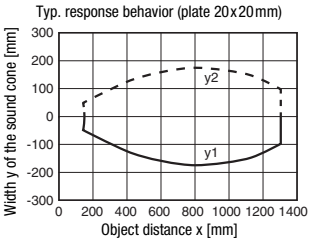
Diagrams

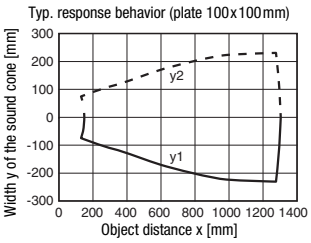
HTU418B-400/…-M12

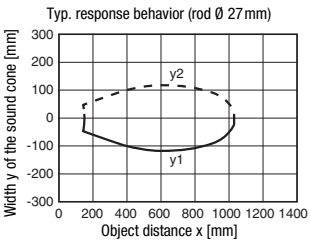


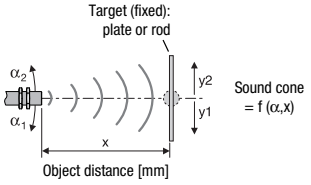


HTU418B-1300/…-M12









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

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

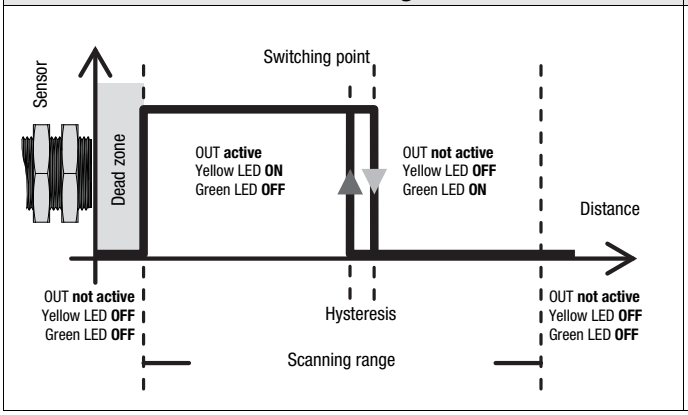
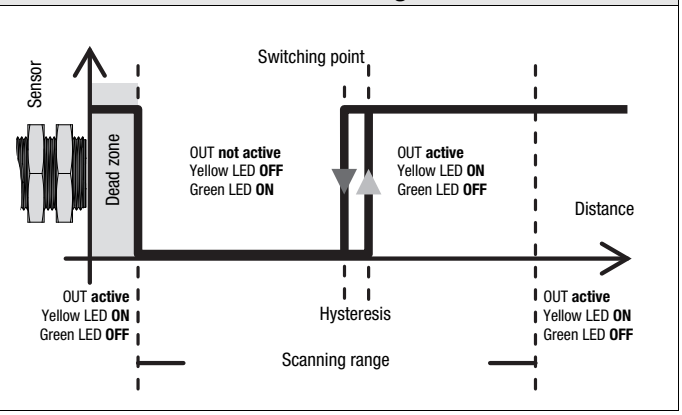
Order guide

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

	Designation	Part no.
Scanning range		
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:

NO contact switching behavior	NC contact switching behavior
	

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 **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 then **remains 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. The 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. The 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 **U_B** for **2 … 7s** (Leuze teach adapter: position "Teach-U_B"). The current state of output **OUT1** remains frozen while the adjustment is performed.	**1.** To change the switching function, **connect** input **Teach-IN** to **U_B** for **7 … 12s** (Leuze teach adapter: position "Teach-U_B"). The current state of output **OUT2** remains frozen while the adjustment is performed.
2. The **green and yellow LED flash alternately at 2Hz**. The switching function has been reversed. The switching behavior corresponds to the diagram shown above.	**2.** The **green and yellow LED flash alternately at 5Hz**. 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_B is connected**. **If no sensor action is desired, pin 2 must remain unconnected**!