

HTU418B

STANDARD ultrasonic sensors with 1 switching output

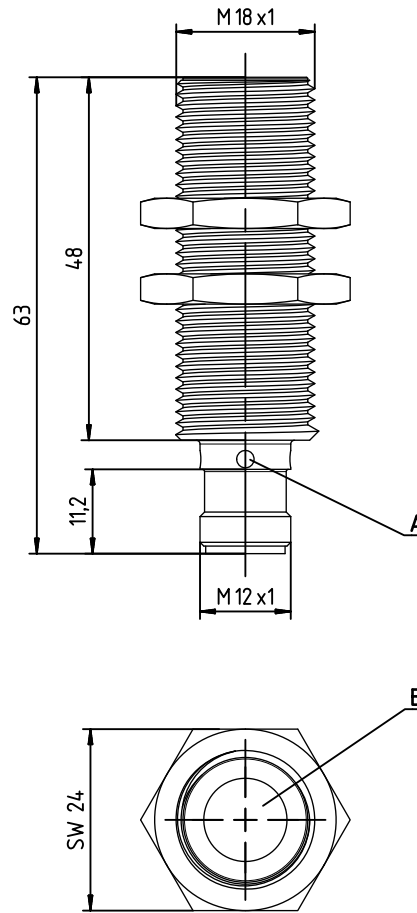
Dimensioned drawing



25 ... 400mm
100 ... 700mm
150 ... 1000mm



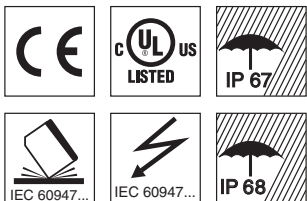
- Largely surface-independent function, ideal for the detection of liquids, bulk materials, transparent media, ...
- Small dead zone at long range
- Adjustment of the switching point can be taught
- NO/NC function reversible
- 1 switching output (PNP)
- Extra short construction
- **NEW** – Stable all-metal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



- 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
Teach-IN	5	gr/GY



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)

Specifications

Ultrasonic specifications

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

HTU418B-400/4TX...

25 ... 400mm ²⁾
25 ... 400mm
310kHz
9°
0.5mm
axial
± 0.15 % ^{1) 5)}
5mm ¹⁾
0.17 %/K

HTU418B-700/4TX...

100 ... 700mm ³⁾
100 ... 700mm
200kHz
16°
1mm
axial
± 0.15 % ^{1) 5)}
10mm ¹⁾
0.17 %/K

HTU418B-1000/4TX...

150 ... 1000mm ⁴⁾
150 ... 1000mm
200kHz
16°
1mm
axial
± 0.15 % ^{1) 5)}
10mm ¹⁾
0.17 %/K

Timing

Switching frequency
Response time
Delay before start-up

7Hz
71ms
< 300ms

8Hz
62ms
< 300ms

8Hz
62ms
< 300ms

Electrical data

Operating voltage U_B ⁶⁾
Residual ripple
Open-circuit current
Switching output
Function
Output current
Switching range adjustment

15 ... 30V DC (incl. ± 10 % residual ripple)
± 10 % of U_B
≤ 50mA
1 x PNP transistor
NO contact, reversible
max. 150mA
teach-in (Pin 2):
for OUT1: connected to GND for 2 ... 7s
teach-in (pin 2):
for OUT1: connected to U_B for 2 ... 7s

Changeover NO/NC ⁷⁾

Indicators

Yellow LED
Yellow LED, flashing
Green LED

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

Mechanical data

Housing
Weight
Ultrasonic transducer
Connection type
Fitting position

all-metal brass, nickel-plated
50g
piezoceramic ⁸⁾
M12 connector, 5-pin
any

Environmental data

Ambient temperature
(operation/storage)
Protective circuit ⁹⁾
VDE safety class
Degree of protection
Standards applied
Certifications

-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 ^{6) 10) 11)}

1) At 20°C

2) Target: plate 20mm x 20mm

3) Target: plate 100mm x 100mm

4) Target: plate 100mm x 100mm

5) Of full scale value

6) For UL applications: for use in class 2 circuits according to NEC only

7) Not applicable for Type HTU418B-1000 / 4TX-M12P2 (50130241)

8) The ceramic material of the ultrasonic transducer contains lead zirconium titanate (PZT)

9) 1=short-circuit and overload protection, 2=polarity reversal protection, 3=wire break and inductive protection

10) 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)

11) Ambient temperature 85°C. Use same supply source for all circuits.

Deviating Specifications for HTU418B-1000 / 4TX-M12P2

Customer-specific parameterization with the following characteristics:

- Dead zone: 350mm
- Switching point: set to 560mm on delivery
- Switching hysteresis: 25mm
- Switch-on/Switch-off delay: 1.8s
- No adjustment of the switching function (NC/NO) via the teach input

Remarks

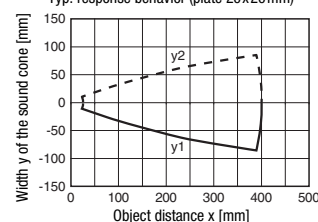
Operate in accordance with intended use!

- ⚠ 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.

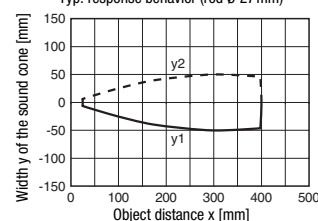
Diagrams

HTU418B-400/...-M12

Typ. response behavior (plate 20x20mm)

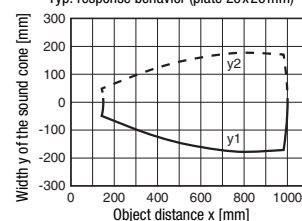


Typ. response behavior (rod Ø 27mm)

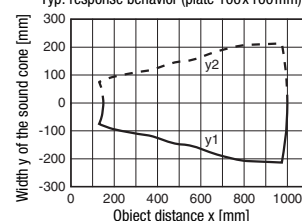


HTU418B-700/...-M12 HTU418B-1000/...-M12

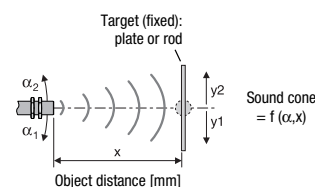
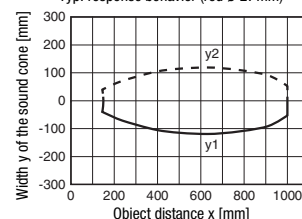
Typ. response behavior (plate 20x20mm)



Typ. response behavior (plate 100x100mm)



Typ. response behavior (rod Ø 27mm)



HTU418B

STANDARD ultrasonic sensors with 1 switching output

Part number code

H	T	U	4	1	8	B	-	1	0	0	0	.	X	3	/	4	T	X	-	M	1	2	P	x
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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

700 100 ... 700

1000 150 ... 1000

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

Special devices

Px Special device version x = 1 ... 9

free Standard device

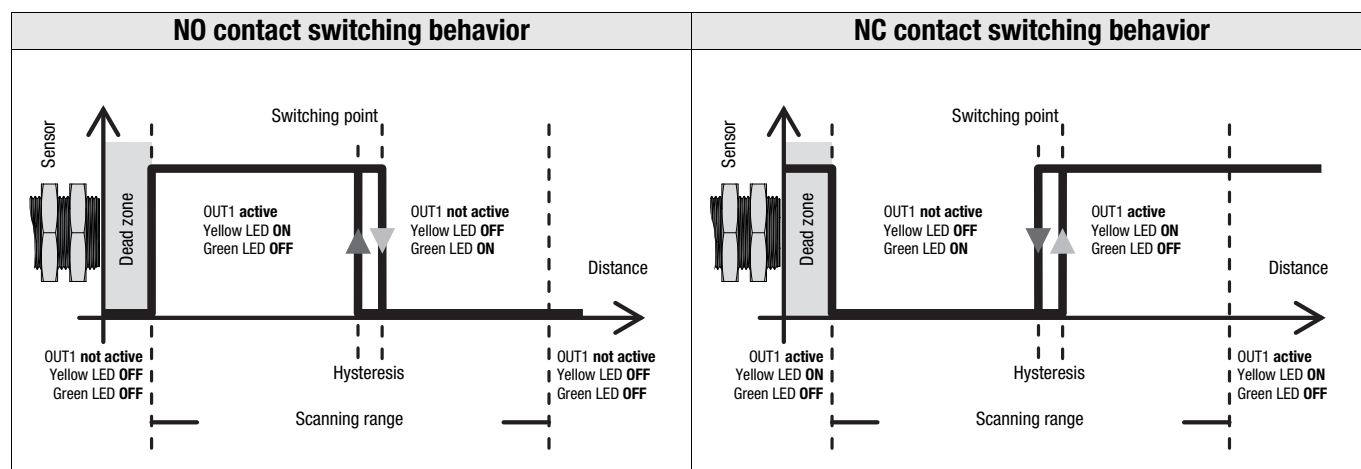
Order guide

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

	Designation	Part no.	Remark
Scanning range			
25 ... 400mm	HTU418B-400/4TX-M12	50124269	
100 ... 700mm	HTU418B-700/4TX-M12	50131020	
150 ... 1000mm	HTU418B-1000/4TX-M12	50124270	
350 ... 1000mm	HTU418B-1000/4TX-M12P2	50130241	customer specific parameterization

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:



Adjusting the switching point via the teach input

The switching point of the sensor is set to 400mm, 700mm or 1000mm on delivery.

By means of a simple teach event, the switching point can be 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
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.
3. The yellow LED flashes at 3Hz and then remains on . The current object distance has been taught as the new switching point.
4. Error-free teach: LED states and 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.

Adjusting the switching function (NC/NO) via the teach input ¹⁾

The switching function of the sensor 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
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.
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.



Notice!

Please note that **pin 2** and **pin 5** are **connected** internally. The **switching point** is taught when **GND** is connected, and the **output function** is reversed when **U_B** is connected due to the configuration of the input.

If no sensor action is desired, pin 2 and pin 5 must remain unconnected!

¹⁾ Not applicable for Type HTU418B-1000 / 4TX-M12P2 (50130241)