HRTU 412 — Ultrasonic scanners with background suppression

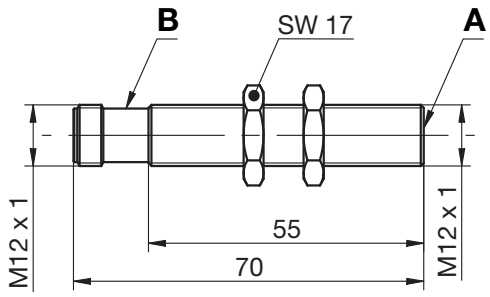
en 02-2010/11 50113349

10 … 200 mm
40 … 400 mm

12 - 30 V DC | 50 Hz | 20 Hz

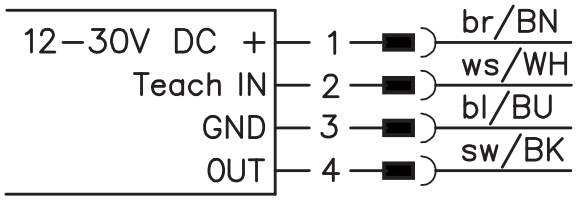
- Small ultrasonic scanner in M12 round housing in protection class IP 67
- Various opening angles and sound cone geometries
- Switching behavior largely independent of surface properties
- Precise switching point adjustment through teach-in via a cable

Dimensioned drawing



A Active surface
B Green indicator diode

Electrical connection



IEC 60947... | IEC 60947... | IP 67

Accessories:

(available separately)

- M12 connectors (KD …)
- Ready-made cables (K-D …)

Specifications

		HRTU 412/…-S…	HRTU 412/…
Ultrasonic data			
Scanning range		10 … 200mm	40 … 400mm
Adjustment range of the switching point		30 … 200mm	60 … 400mm
Opening angle		narrow	standard
Sound frequency		380kHz	290kHz
Repeatability		≤ 0.5mm (relative to the switching point)	
Temperature drift		≤ 0.18%/K (relative to the switching point)	
Hysteresis		typ. 4% (relative to the switching point)	
Timing			
Switching frequency		50Hz	20Hz
Response time		≤ 10ms	≤ 25ms
Decay time		≤ 10ms	≤ 25ms
Delay before start-up		≤ 200ms	
Electrical data			
Operating voltage U_B [1]		12 … 30VDC incl. taking into account the residual ripple	
Residual ripple		≤ 10% of U_B	
Bias current		≤ 35mA	
Switching output/function	…/4NO…	pin 4: PNP transistor, make-contact (NO)	
	…/4NC…	pin 4: PNP transistor, break-contact (NC)	
	…/2NO…	pin 4: NPN transistor, make-contact (NO)	
	…/2NC…	pin 4: NPN transistor, break-contact (NC)	
Output current		≤ 200mA	
Load		C_{max} = 10nF, L_{max} = 20µH	
Teach input		pin 2: active high	
Signal voltage high/low		≥ (U_B-2V)/≤ 2V	
Indicators			
Green LED		switching state (on = object detected)	
Green LED slowly flashing		teach event active	
Green LED quickly flashing		teaching error	
Mechanical data			
Housing		brass nickel-plated	
Active surface		plastic (PC)	
Standard measurement object [2]		15 x15mm	30 x30mm
Attachment		in through hole or thread M12x1	
Weight		approx. 10g	
Connection type		M12 connector, 4-pin	
Environmental data			
Ambient temp. (operation/storage)		-10°C … +60°C/-40°C … +85°C	
Protective circuit [3]		1, 2, 3	
VDE safety class		III	
Protection class		IP 67	
Standards applied		IEC/EN 60947-5-2	
Certifications		UL 508	

1) Observe the safety regulations and installation instructions regarding power supply and wiring; for UL applications: only for use in "Class 2" circuits acc. to NEC
2) Aligned perpendicular to sensor reference axis
3) 1=polarity reversal protection, 2=short circuit protection, 3=overload protection for all outputs

Remarks

- **Approved purpose**:
  This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not to be used for the protection of persons.

Tables

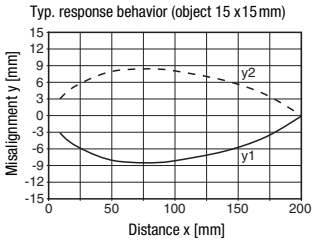
1	10	200
2	40	400

1	HRTU 412/…-S…
2	HRTU 412/…

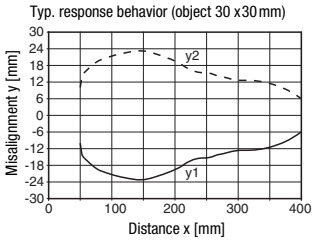
Scanning range [mm]

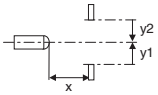
Diagrams

HRTU 412/…-S…



HRTU 412/…





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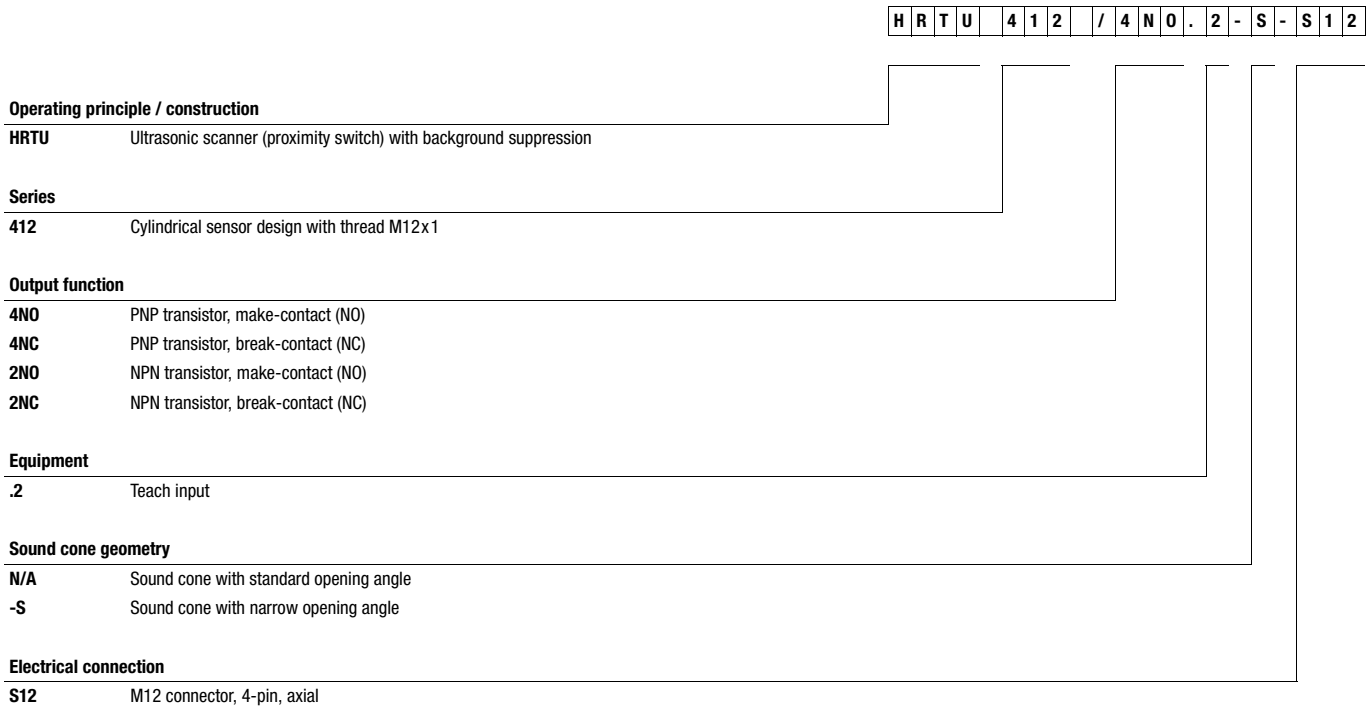
Type key

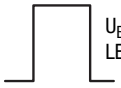


Order guide

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

Opening angle of the ultrasonic cone	Designation	Part No.
Narrow	HRTU 412/4NO.2-S-S12	50113993
	HRTU 412/4NC.2-S-S12	50113995
	HRTU 412/2NO.2-S-S12	50113997
	HRTU 412/2NC.2-S-S12	50113999
Standard	HRTU 412/4NO.2-S12	50113994
	HRTU 412/4NC.2-S12	50113996
	HRTU 412/2NO.2-S12	50113998
	HRTU 412/2NC.2-S12	50114000

Switching point adjustment via teach-in

	Teach-in input PIN 2
① **Activate teach-in**	 U_B for approx. 2s, LED flashes
② **Place the object at the desired switching position and conclude the teach event**	 Position object U_B briefly ends the teach event; LED on The teach event ends after 2s, the sensor detects the object at this position and the LED is on. If the object is removed, the LED must be switched off.

Teaching error

If the object is located outside of the scanning range during the teach event, a teaching error occurs.
The LED flashes quickly and the switching output is reset to the factory setting (switching point at the max. scanning range).

Resetting the sensor to factory setting

	Teach-in input PIN 2
Restoring the factory setting	 U_B for at least 6s, LED flashes quickly

Locking the teach input

The sensor automatically locks the teach input after either 5min. after power-on or 5min. after the last teach event is ended.
A new teach event is only possible after disconnecting the sensor from voltage.

If the **Teach-IN** input is not used,
it must be connected to GND!