

FEATURES

- Ultrasonic Sensors
- insensitivity to countless materials, surface types, and colors
- Wood, metal, or plastic; colored, reflective or transparent
- Detection range 100--1000mm
- Output type PNP (NO/NC)
- Temperature compensation
- Intrinsically Safe CE & IP67 compliant in properly designed integrated system
- Tamperproof & Rugged
- IP67 enclosure rating
- Accurate under demanding environmental conditions

RS PRO Ultrasonic Proximity Sensor

RS Stock No.: 2181166



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

Ultrasonic Proximity Sensors

Ultrasonic sensors precisely detect objects made from various materials regardless of their shape, colour, or surface contour. They operate using high-frequency sound waves that are inaudible to the human ear.

- Very Short Dead Band 30mm
- Small Size M18
- Liquid and Solid Level Measurement
- Position Detection
- Factory automation
- Tanks, Totes, Processing

General Specifications

Series	SF2
Detection Range	100mm – 1000mm
Transducer Frequency	200KHz
Sensor Configuration	Diffuse Reflection
Output Type	1 Switch output PNP NO/NC, Programmable
Response Time	65ms
Beam Angle	8°
Directivity (Deg)	
Sensitivity (mVp-p)	
Terminal Type	M12 - 4 Pin
Communication Interface	
Indicator	LED
Wire Technique	4-wire
Electrical Connection	4 core PVC cable
Cable Length	2m
Minimum Operating Temperature	-25°C
Maximum Operating Temperature	75°C
Shock Resistance	
Vibration Resistance	

Electrical Specifications

Operating Voltage Range	10V to 30V DC
Current Consumption	≤15mA (No-load)
Voltage Drop	2V
Maximum Load	500 Ohm
Switching Frequency	MAX 10Hz
Switching Current	200mA
Reverse Polarity Protection	Yes
Short Circuit Protection	Yes
Overload Protection	Yes

Mechanical Specifications

Ultrasonic Proximity Sensors

Body Style	Block
Thread Size	
Housing Material	PBT OR FRP
Front Material	Epoxy
Dimensions	56mm x 36.5mm x 26mm
Width / Diameter	36.5mm
Length	56mm
Depth	
Weight	280g

Protection Category

IP Rating	IP67
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Additional Information

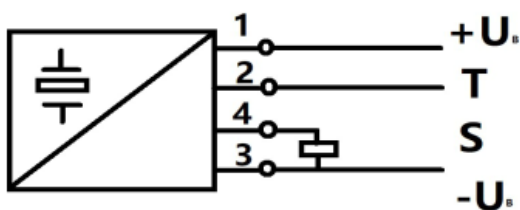
EAN	
Custom Tariff Number	

Classification

eCl@ss Version	
UNSPSC Version	

Approvals

Compliance/Certifications	CE / RoHS EN 60947-5-2:2020
Declarations	MFR Declaration of Conformity



1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Wire Colors in accordance with EN 60947-5-2

Adjusting switching Points

The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage - U_B or + U_B to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s. LEDs indicate whether the sensor has recognised the target during the TEACH-IN procedure. Switching point A1 is taught with - U_B , A2 with + U_B . Five different output functions can be set.

1. Window mode, normally-open function.
2. Window mode, normally-closed function.
3. One switching point, normally-open function
4. One switching point, normally-closed function.
5. Detection of object presence.

Switching point, Setting distance only after power on. The internal clock can assure can't be changed after 5 mins when power on. If want to change the switching point, the user can only set the request distance after power restart.

TEACH-IN window mode, normally-open function

- Set target to near switching point
- TEACH-IN switching point A1 with - U_B
- Set target to far switching point
- TEACH-IN switching point A2 with + U_B

TEACH-IN window mode, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A2 with + U_B
- Set target to far switching point
- TEACH-IN switching point A1 with - U_B

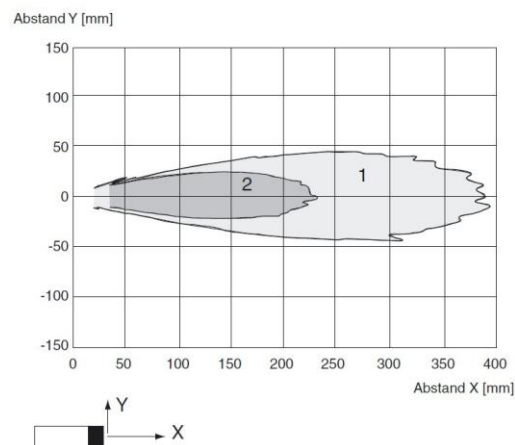
TEACH-IN switching point, normally-open function

- Set target to near switching point
- TEACH-IN switching point A2 with + U_B
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with - U_B

TEACH-IN switching point, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A1 with - U_B
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with + U_B

Charakteristische Ansprechkurve



Curve1: flat surface 100mm x 100mm

Curve2: round bar, $\Phi 25$ mm

Ultrasonic Proximity Sensors

TEACH-IN detection of objects presence

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with $-U_B$
- TEACH-IN switching point A2 with $+U_B$

Default setting of switching point

A1=blind range,A2=nominal distance

LED displays

Displays in dependence on operating mode

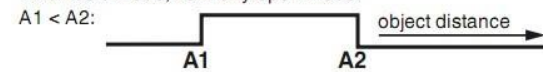
Red LED Blue LED

TEACH-IN switching point

Object detected	off	flashes
No object detected	flashes	off
Object uncertain(TEACH-IN invalid)	off	off
Normal operation	off	Switching state
Fault	on	Previous state

Programmable output modes

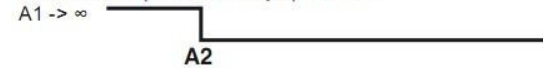
1. Window mode, normally open mode



2. Window mode, normally closed mode



3. One switch point, normally open mode



4. One switch point, normally closed mode



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

Installation conditions

If the sensor is installed at the environment temperature fall below 0°C,It should do well on the protective measures. In case of direct mounting of the sensor in a through hole using the steel nuts, it has to be fixed at the middle of the housing thread.

Drawing

