FEATURES

- Ultrasonic sensors

- insensitivity to countless materials, surface types, and colors

- Wood, metal, orplastic; colored, reflective or transparent

- Narrow Beam and Short Dead Band

- Temperature Compensated

- Intrinsically Safe CE & IP67 compliant in properly designed integrated system

- Tamperproof & Rugged

- Synchronization

- Accurate under demanding environmental conditions

RS PRO Ultrasonic Proximity Sensor

RS Stock No.: 2565747

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.

Ultrasonic Proximity Sensors

Product Description

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

- Liquid and Solid Level Measurement
- Position Detection
- Factory automation
- Tanks, Totes, Processing

General Specifications

Series	M30
Detection Range	200mm – 4000mm
Transducer Frequency	70KHz
Sensor Configuration	Diffuse Reflection
Output Type	1 analogue output 4…20mA
Response Time	125ms
Beam Angle	10°
Deviation of the characteristic curve	±1% of full-scale value
Repeat accuracy	±0.1% of full-scale value
Terminal Type	M12 - 5 Pin
	LED
Wire Technique	5-wire
Electrical Connection	Male connector M12 5 pins
Cable Length	2m
Minimum Operating Temperature	-25℃
Maximum Operating Temperature	75℃

Electrical Specifications

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

Ultrasonic Proximity Sensors

Mechanical Specifications

Body Style	Barrel
Thread Size	M30
Housing Material	Brass, nickel-plated
Front Material	Epoxy
Dimensions	¢30mm x 110mm
Width / Diameter	¢30mm
Length	110mm
Weight	160g

Protection Category

IP Rating	IP67

Approvals

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

Electrical Connection
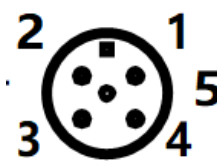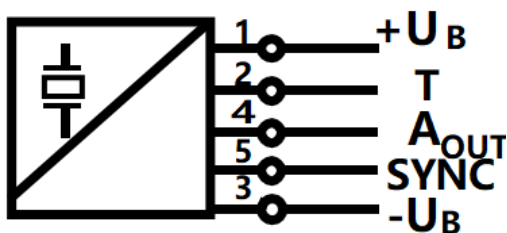
1   BROWN：+U
2   WHITE: TECH IN
3   BLUE: −U
4   BLACK: OUTPUT
5   GREY：SYNC

Synchronization

This sensor features a synchronization input for suppressing ultrasonic mutual interference ("cross talk"). If the input port is not switched on, the sensor operates at the internal frequency. A square wave voltage can also be added to the input port to synchronize the sensor. A synchronization pulse on the synchronization input initiates a measurement cycle. The synchronization pulse width must be greater than 100ms. The measurement period is triggered by the falling edge of the pulse. Because the sensor uses the average of five measurements internally, the switching state changes only when all five measurements exceed the switching threshold. If the low level duration reaches or exceeds 1 second, or if the synchronous input port is suspended, the sensor will operate normally. Synchronization is not allowed during the setting period. Otherwise, learning cannot be performed if synchronization is used. Synchronization can work in two ways.

1. Multiple sensors are triggered by the same synchronization signal and work synchronously.

2. The synchronization pulse is output to a sensor in turn, that is, each sensor works in multiple ways. Adding a high level tothe synchronous input stops the sensor.

Adjusting the evaluation limits

The ultrasonic sensor features an analogue output with two teachable evaluation limits. 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. The lower evaluation limit A1 is taught with $-U_B$, A2 with $+U_B$.

Two different output functions can be set:

1. Analogue value increases with rising distance to object (rising ramp)

2. Analogue value falls with rising distance to object (falling ramp)

Evaluation limits may only be specified within the first 5 minutes after

Power on. To modify the evaluation limits later,the user may specify the desired values only after a new Power On.

TEACH-IN rising ramp (A2 > A1)

- Position object at lower evaluation limit

- TEACH-IN lower limit A1 with $-U_B$

Characteristic response curve
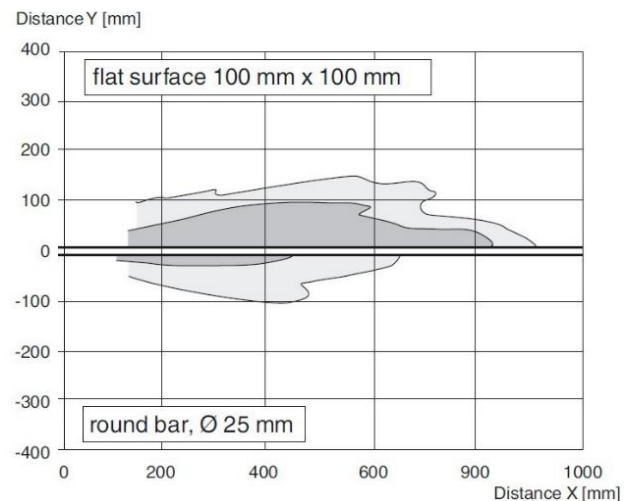
Ultrasonic Proximity Sensors

- Position object at upper evaluation limit

- TEACH-IN upper limit A2 with + U_B

TEACH-IN falling ramp (A1 > A2):

- Position object at lower evaluation limit

- TEACH-IN lower limit A2 with + U_B

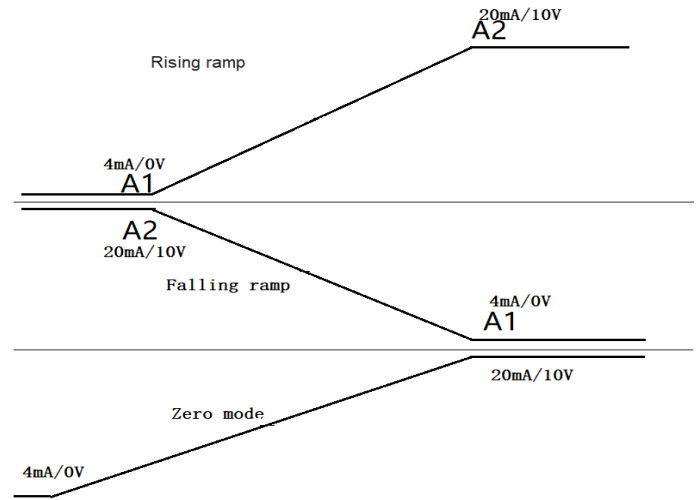- Position object at upper evaluation limit

- TEACH-IN upper limit A1 with - U_B

Default setting

A1: unusable area

A2: nominal sensing range

Mode of operation: rising ramp

Analog output operating modes

LED display

Displays in dependence on operating mode	Red LED	Blue LED
TEACH-IN evaluation limit		
Object detected	off	flashes
No object detected	flashes	off
Object uncertain (TEACH-IN invalid)	on	off
Normal mode (evaluation range)	off	on
Fault	on	previous state