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INDUSTRIAL PRODUCT DATASHEET

Grove - Ultrasonic Sensor (US5) - ToF, distance detection, echo energy intensity value, materials distinguished, 1.6cm in diameter, 1.2cm in heigh

Grove Ultrasonic Sensor (US5) delivers millimeter-accurate Time-of-Flight distance sensing, echo energy intensity, and soft/hard material distinction in a compact, plug-and-play design for robotics and analysis.

SKU	UPDATED	PRICE
101021097	2026-04-15 07:41:27	$19.90(Excl. VAT)



Overview



The Grove Ultrasonic Sensor (US5) is a miniature Time-of-Flight ultrasonic sensor measuring 1.6 cm in diameter and 1.2 cm in height, providing millimeter-level distance detection, echo energy intensity values, and the ability to distinguish between soft and hard materials. It features ultra-low power consumption with a <30 mA sleep mode and 40 mA active mode, plus plug-and-play connectivity, making it suitable for cleaning robots, material analysis, 3D printer level detection, and home service robots.

Key Features

Grove Ultrasonic Sensor (US5) features a compact design, utilizing the Time-of-Flight (ToF) principle for accurate distance measurement, and the ability to differentiate between different materials. It offers plug and play connector and the easy to use tutorial.

Ultrasonic Sensor with ToF Principle: Utilize the Time of Flight principle to accurately measure distances, gestures, or any scenario that requires high precision or fast response , with ultrasonic waves

Multiple Information Output: Offer millimeter-level distance detection, echo energy intensity value, and materials distinguished(soft or hard)

Ultra-low power Consumption: Include sleeping mode where the current is <30 mA and the working mode is 40mA

Miniature Round Design: 1.6cm in diameter and 1.2cm in height

Plug and play: Provide plug-n-play connector and easy-to-use tutorial

Description

The Grove Ultrasonic Sensor (US5) incorporates the Ultrasonic **Time-of-Flight** (ToF) principle. By calculating the time it takes for ultrasonic echo signals to travel to different surfaces and back, it enables precise distance measurements.

In addition to its precise measurements, the sensor boasts a compact and miniature round design where is **1.6cm in diameter and 1.2cm in height**. Its small size makes it well-suited for applications where space is limited. Furthermore, the sensor operates on ultra-low power, ensuring efficient energy usage and making it suitable for projects that prioritize energy efficiency.

Apart from distance information, the sensor also outputs the **echo energy intensity value**. This additional data can be valuable for analyzing the characteristics of different materials or surfaces, providing further insights beyond distance measurements alone.

The Grove Ultrasonic Sensor (US5) offers **flag bits for material differentiation**. These flag bits help distinguish between soft and hard materials, allowing the sensor to identify different ground materials. This capability is particularly useful in applications such as cleaning robots, where the ability to recognize and adapt to various surfaces is essential.

When it comes to installation, the Grove Ultrasonic Sensor (US5) is designed for convenience. Its small size and compatibility with the Grove system make it easy to integrate into projects or prototypes, reducing the complexity of installation and setup.

Application

- Cleaning Robot
- Material Analyzing
- 3D printer level detection
- Home service robot

Specification

Hardware Overview

Part List

Product Gallery













Specification

Parameters	Details
Ranging Frequency	100 Hz
Ranging Distance	20mm ~ 50mm
Supply Voltage	3.3V
Sleeping current	<30 mA
Working current	40 mA
Operating Temperature	-10 ~ 40℃
Weight	2.5 g

Applications

- **Cleaning Robot**
- **Material Analyzing**
- **3D printer level detection**
- **Home service robot**

Part List

Grove - Ultrasonic Sensor (US5)	×1
JST PH 1.0mm 4P to Grove Cable	x1

Compliance & Logistics

HSCODE	9031809090
USHSCODE	9031808085
UPC	
EUHSCODE	9013101000
COO	CHINA

Resource Links

- https://www.seeedstudio.com/Grove-Ultrasonic-Sensor-SMS812-p-5805.html
- Development Manual
- DataSheet
- PCN-101021097-Grove - Ultrasonic Sensor (US5) v1.0

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