Product Specification

Number: L-KLS3-4016TR

Name: Ceramic Ultrasonic Sensor

Specification:

Customer: D02

Date: 2020-04-26

Customer Signature:

KLS electronic

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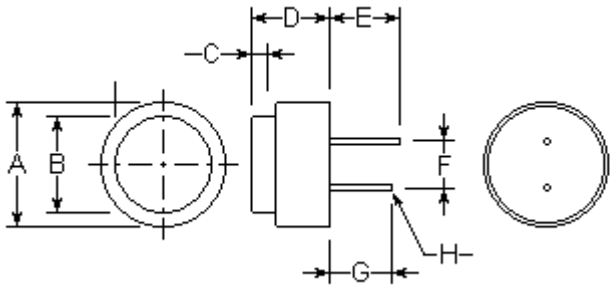
Compile	Check	Review	Approval
Jenny	Jack.C		

1. SCOPE

This specification shall cover the characteristics of the ceramic ultrasonic sensor with L-KLS3-4016TR L-KLS3-4016TR Compatible with transmitting and receiving.

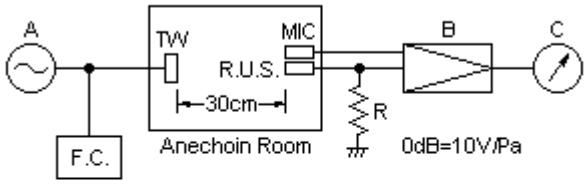
2. OUTLINE DIMENSIONS (UNIT: mm)



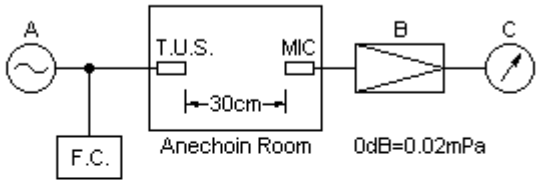
A = Ø16.0±0.5
B = 12.5±0.5
C = 3.0±0.5
D = 10.0±0.5
E = 9.0±0.5
F = 5.0±0.5
G = 7.0±0.5
H = Ø0.6±0.1

3.TEST CIRCUIT

Sensitivity

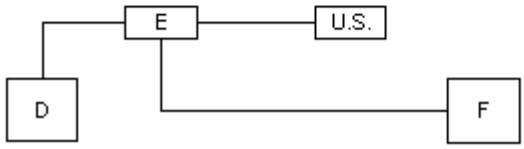


Sound Pressure Level



Input Voltage: 10Vrms

Ringing



A: Oscillator B: Amplifier C: Voltmeter D: Pulse Generator
E: Control Circuit F: Oscilloscope R: 3.9KΩ U.S.: Ultrasonic Sensor
MIC: Microphone TW: Tweeter R.U.S.: Receiver Ultrasonic Sensor
T.U.S.:Transmitter Ultrasonic Sensor F.C.: Frequency Counter

4.CHARACTERISTICS

Part number	L-KLS3-4016TR
Construction	Water proof type
Using method	Dual use
Center frequency	40.0±1.0KHz
Sound pressure level	105dB min.
Sensitivity	-82dB min.
Capacitance	1800Pf±20%
Ringing	1.2ms max.
Maximum input voltage	120Vp-p
Directivity	80°±15° (-6dB)
Operating temperature	-20°C~+60°C
Storage Temperature	-40°C~+80°C

5. ENVIRONMENTAL CHARACTERISTICS

5.1 Sound pressure level and sensitivity shall not change by more than 15dB in temperature range of -20°C to 60°C, at a relative humidity of 30%.

5.2 Sound pressure level and sensitivity shall not change by more than 6dB in the humidity of 10% to 90%, at the temperature of 25°.

5.3 MOISTURE

Keep the sensor at 40°C±2°C and 90°C to 95°C R.H for 96±4 hours. Then, release the sensor into the room conditions for 24 hour prior to the measurement. It shall fulfill the specifications in Table 1.

5.4 VIBRATION

Subject the sensor to the vibration for 1 hour each in the X.Y and Z axes with the amplitude of 1.5mm at 10 to 55 Hz. It shall fulfill the specifications in Table 1.

5.5 HIGH TEMPERATURE EXPOSURE

Subject the sensor to 80±5°C for 24±1 hours. then, release the sensor into the room conditions for 1 hour prior to the measurement. It shall meet the specifications in Table 1.

5.6 LOW TEMPERATURE EXPOSURE

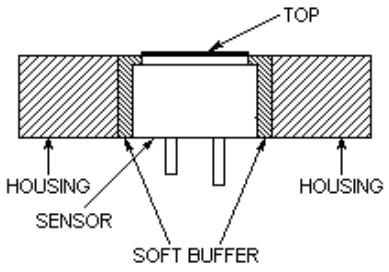
Subject the sensor to -30±5°C for 24±1 hours. Then release the sensor into the room conditions for 1 hour prior to the measurement. It shall meet the specifications in Table 1.

TABLE 1

ITEM	SPECIFICATION
Center Frequency	Within ±0.5KHz
Echo Voltage	Within ±20mv
Ringing	Within ±0.2ms

※ NOTES

- This sensor is designed for use in air. Do not use this sensor in fluid.
- In case where this sensor is to be hold in housing, use soft buffer between sensor and housing. The front part of this
- sensor vibrates in large.



If this part is hold, its characteristics will vary. The top must be free to vibrate.

- To prevent sensor malfunctions, operational failure or any deterioration of its characteristics, do not use this sensor in the following, or similar conditions.

A. In strong shock or vibration.
B. In high temperature and humidity for a long time.
C. In corrosive gases or sea breeze.
D. In an atmosphere of organic solvents.
E. In dirty and dusty environments that may contaminate the sensor front.