

A050A Air transducer

Part Number: H2KA050KA1CD00

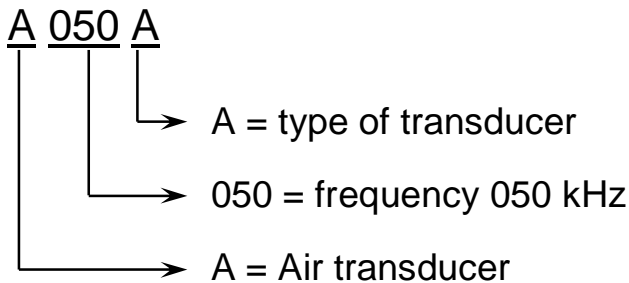


1. Introduction

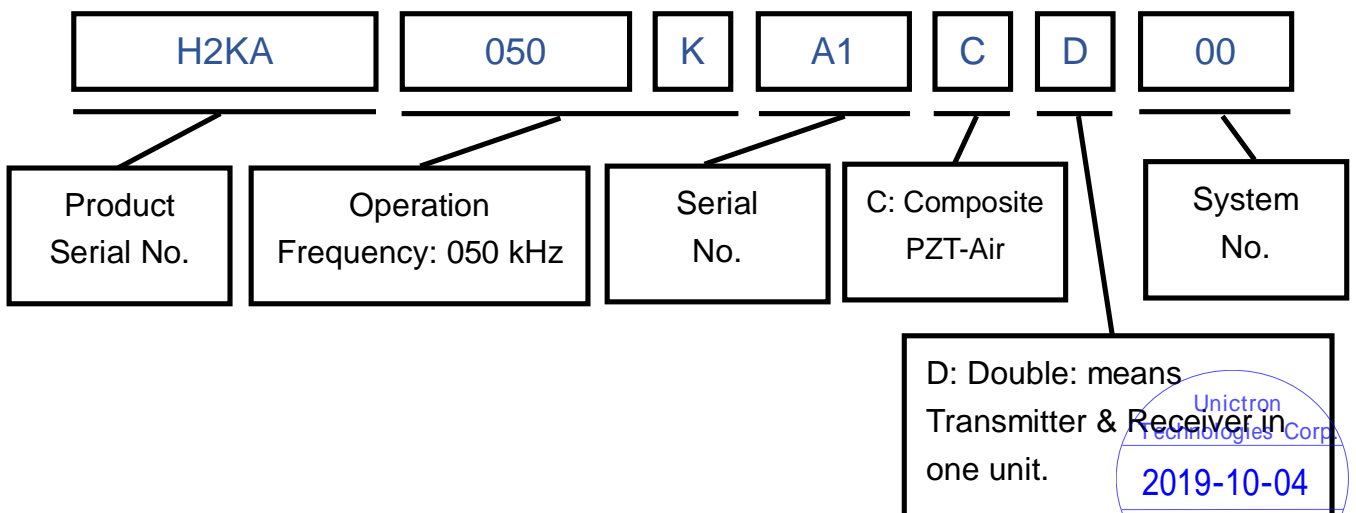
Unictron's A050A ultrasonic transducer is designed to deliver outstanding performance at around 50 kHz frequency. The transducer works as a signal transmitting and receiving unit. This ultrasonic transducer is suitable for non-contact level detection and proximity measurement. In particular, the transducer with the PVDF housing can operate under harsh chemical environment to measure the level of fluids, pastes, and coarse bulk materials.



1.1 Model name

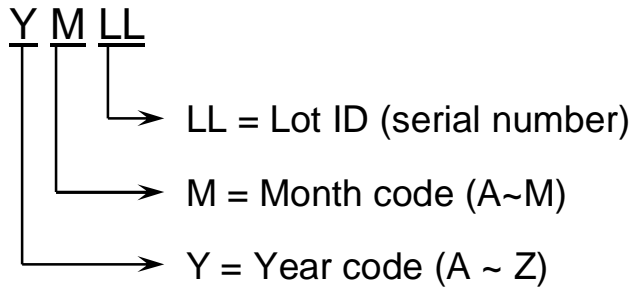


1.2 Part number: H2KA050KA1CD00



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| DESIGNED BY : Evan Su | APPROVED BY : Jeff Chang | | |
| TITLE : A050A Air transducer | | DOCUMENT NO. | H2KA050KA1CD00 |
| | | | REV. A |

1.3 Marking



| Year | Y code | Month | M code |
|------|--------|--------|--------|
| 2017 | S | Jan | A |
| 2018 | T | Feb | B |
| 2019 | U | March | C |
| 2020 | V | April | D |
| 2021 | W | May | E |
| 2022 | X | June | F |
| 2023 | Y | July | G |
| 2024 | Z | August | H |
| 2025 | A | Sep | J |
| 2026 | B | Oct | K |
| 2027 | C | Nov | L |
| 2028 | D | Dec | M |

(I · O not involve the code)

2. Electrical Characteristics

2.1 Major electrical characteristics and testing conditions

| Characteristics | Specifications | Unit |
|-----------------------------------|----------------|------------------|
| Operation frequency | 50 | kHz |
| Overall sensitivity * | min. 4.0 | V _{p-p} |
| Capacitance (@ 1kHz, 1Vrms) | 3500 ± 20% | pF |
| Directivity (full angle @-3 dB) | 10 ± 2 | Degree |
| Maximum driving voltage | 1000 | V _{p-p} |
| Typical sensing range | 0.3 ~ 10 | meter |


* Note: 1. Measured at 25±3°C, 45 to 60% RH.

2. Testing circuit setup: Driving signal: rectangular wave 18Vp-p, 50 kHz, burst number = 10 pulses, drive interval: 20 ms, gain of receiving circuit: 64 dB (Please refer to 2.2 for details)

3. Dimensions of reflecting metal plate: 400x400mm, reflection distance: 600mm

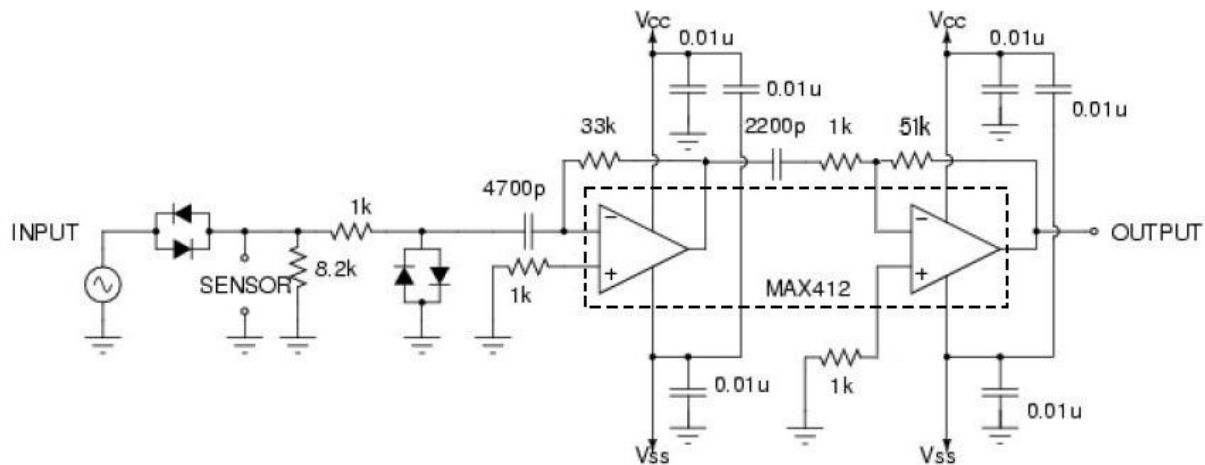
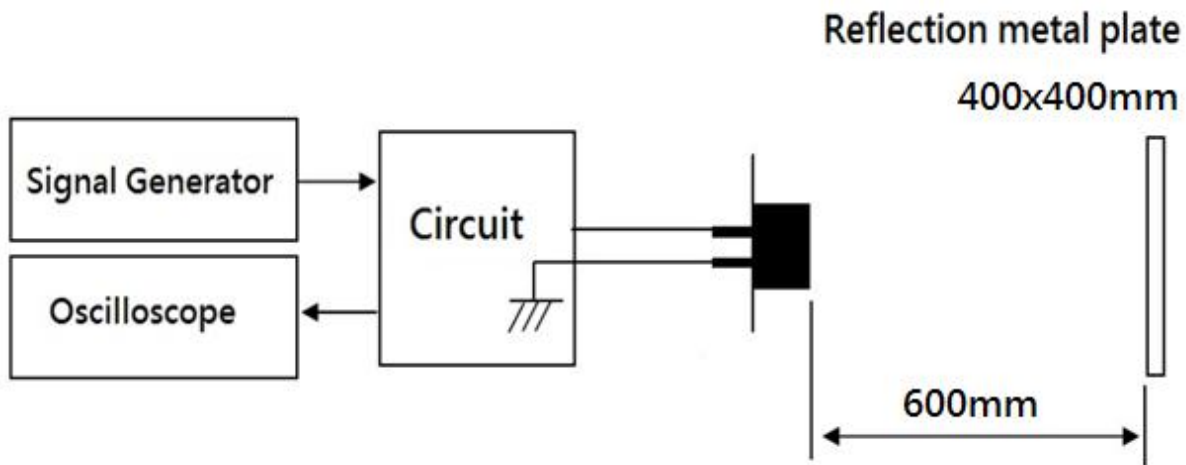
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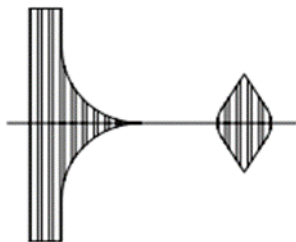
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2.2 Performance testing

Typical setup for sensitivity measurement



Circuit



Drive signal:

Rectangular 18 Vp-p; Frequency=50 kHz; Driving Interval=20ms; Pulse n=10; Gain of receiving circuit: 64 dB

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SCALE : free

UNIT : mm

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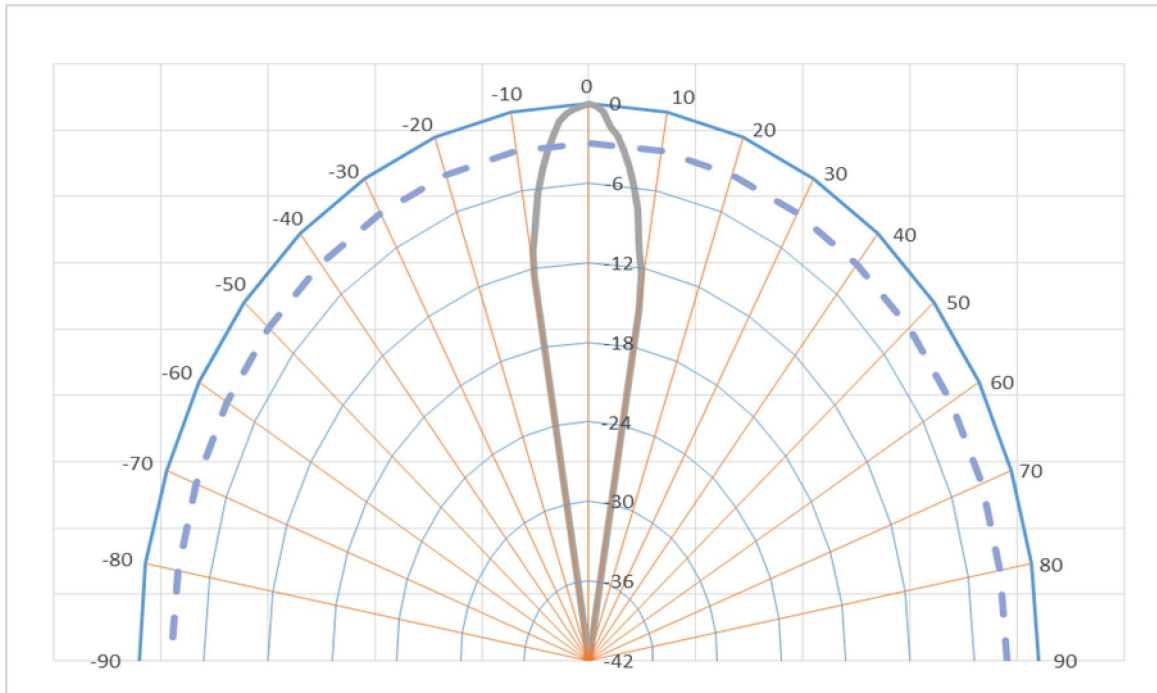
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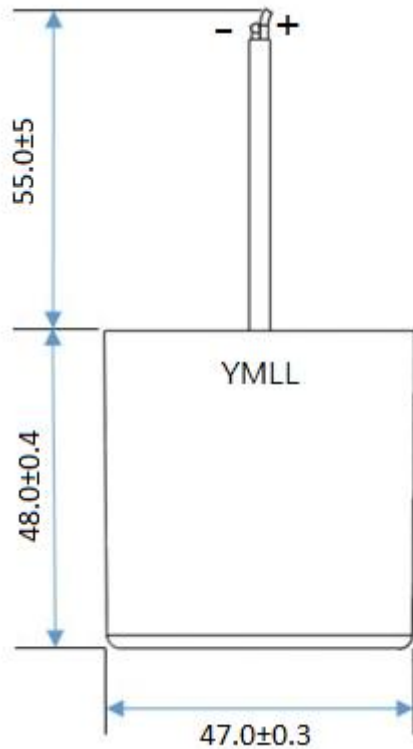
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2.3 Typical directivity diagram

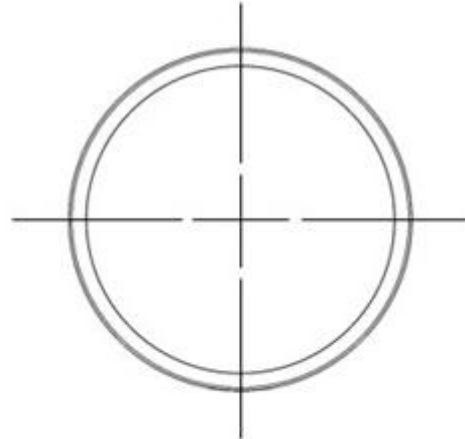


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3. Dimensions




Housing material: PVDF
Unit: mm



| Dimensions | Specifications | Unit |
|---------------------------------|----------------|------|
| Height | 48.0 ± 0.4 | mm |
| OD (bottom face) | 47.0 ± 0.3 | mm |
| OD (open end) | 48.0 ± 0.3 | mm |
| ID (open end) | 43.0 ± 0.25 | mm |
| Cavity depth | Min. 26.5 | mm |
| Wire (RG174U, 50 ohm, Ø2.7mm) | L55.0 ± 5 | mm |



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4. Operation and storage conditions

Operating:

Temperature: -40°C to +85°C

Maximum driving voltage: 1000 Vp-p

Storage:

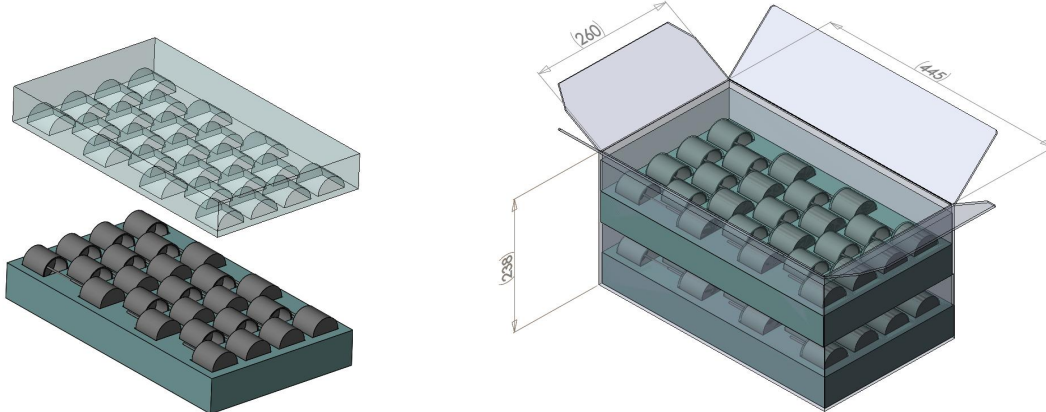
Temperature: -40°C to +85°C


Relative Humidity: 30-80%

5. Packing

5.1 Package

| | |
|----------------------------|-------------------------------|
| Quantity of transducers | 50 pcs (25 pcs x 2 holders) |
| Reference for gross weight | 6.8 kg |

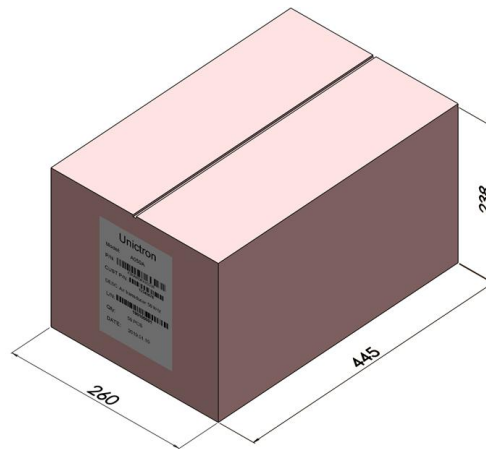
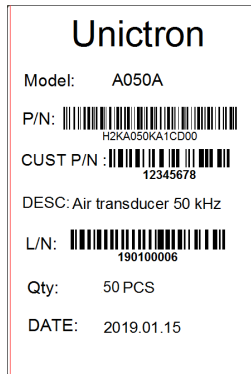


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5.2 Carton and Label

| | |
|-------------------|-------------------|
| Carton Dimensions | 445 x 260 x 238mm |
|-------------------|-------------------|

Label on carton.



6.0 Notes and References

6.1 Piezoelectricity

When exposed to high temperature or high voltage, piezoceramic materials may lose its piezoelectric properties due to depolarization.

6.2 Soldering

Please use the soldering tip to connect the transducer onto circuit. The transducer is not designed for reflow soldering process. Do not put the transducer in the reflow oven.

6.3 Electric connection

Do not connect transducer to DC voltage.


6.4 Installation

Noise may be induced when the transducer is subject to vibration. Please protect the transducer with buffer material at installation.

6.5 Chemical resistance

The housing of the transducer is made of PVDF for chemical resistance. It is particularly suitable for the non-contact level detection in chemical tanks.



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