



PUIaudio



Data Sheet

UTR-18225K-TT

Key Features

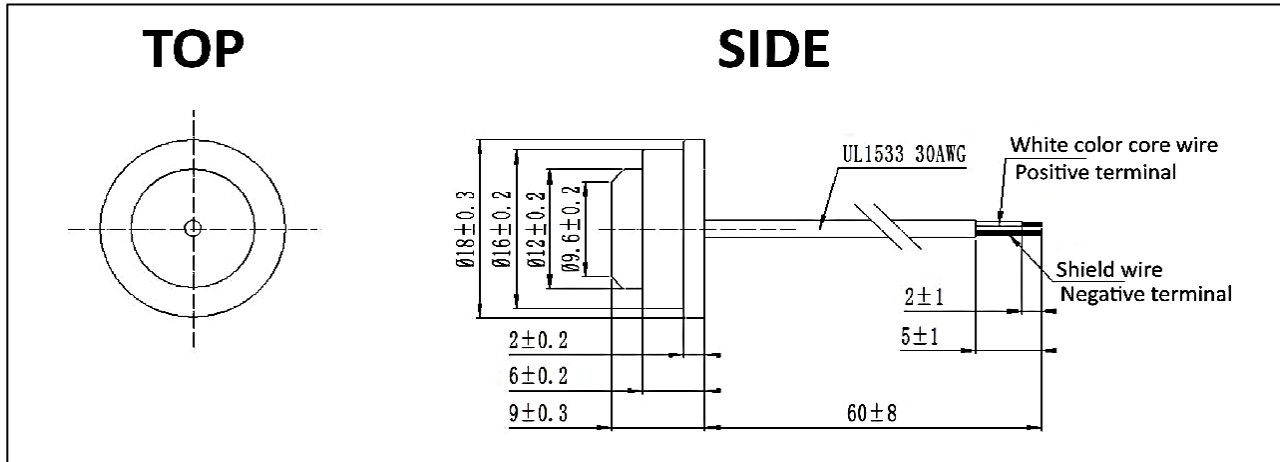
This transducer is designed primarily for gas flow measurement and is equipped with innovative acoustic technology to ensure stability, reliability, and consistent performance.

Specifications

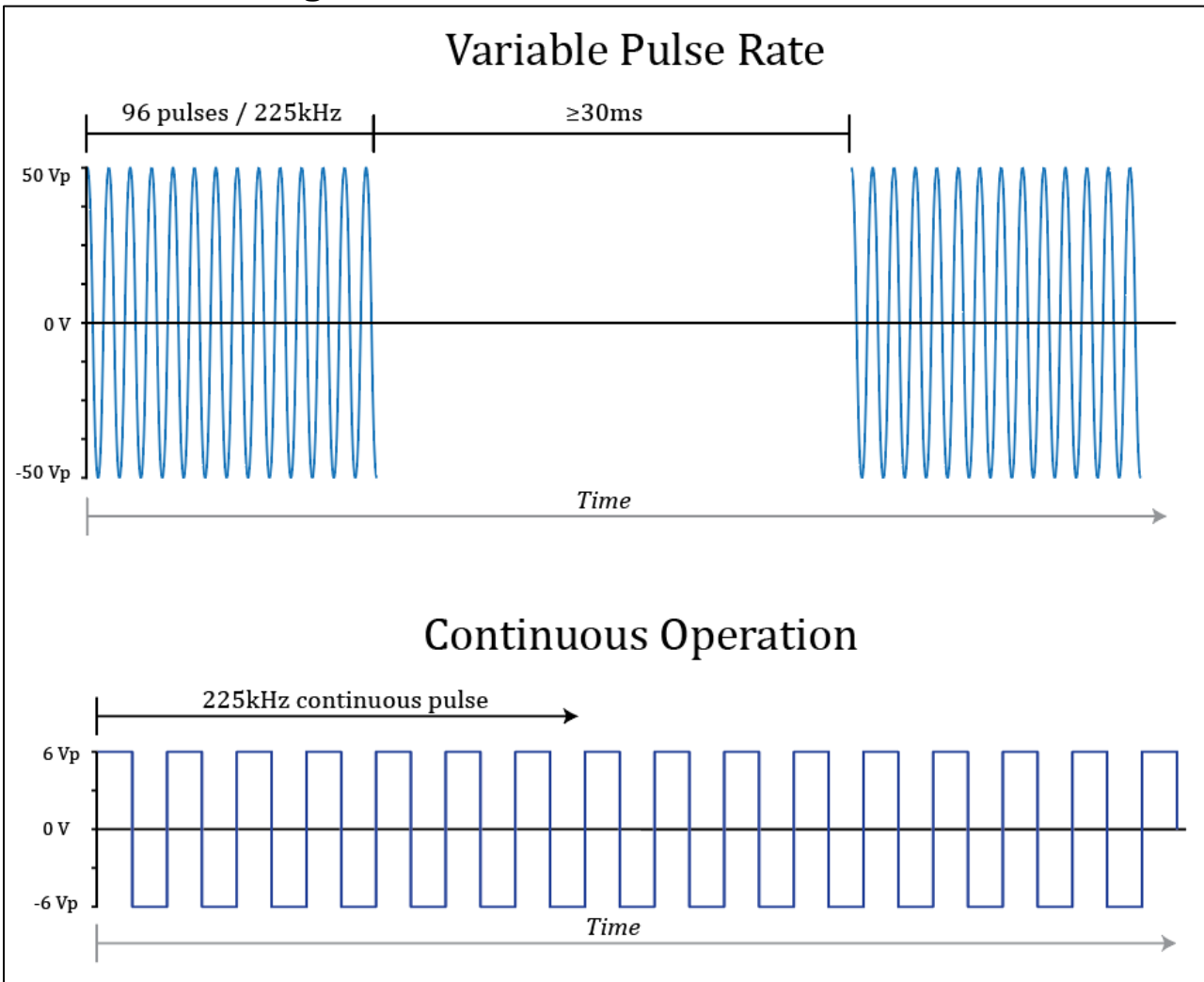
| Parameters | Values | Units |
|---|---------------|------------------------|
| Function | Dual Mode | Transmitter / Receiver |
| Nominal Drive Frequency | 225 ± 5 | kHz |
| Overall Sensitivity Input: 200KHz/5Vp-p/square/3 pulses. Measuring distance: 60cm Receiving sensitivity after amplifying ~30dB | 140 ~ 240 | mVp-p |
| Typical Beam Angle See Direction Test Angle Diagram; measured with sensitivity reduced 50%, test distance 200mm | 15 ± 3 | degrees |
| Capacitance 1kHz/1V/25°C/LCR | 2,200 ± 20% | pF |
| Maximum Driving Voltage Maximum of 96 pulses / Pulse interval 30ms | 100 | Vpp |
| Maximum Driving Voltage Continuous square wave | 12 | Vpp |
| Maximum Pressure | 0.2 | Mpa |
| Operating Temperature | -25 ~ 70 | °C |
| Storage Temperature | -30 ~ 70 | °C |
| Housing Material | Black Plastic | - |
| Environmental Compliances | RoHS/REACH | - |

Test condition: T=25±3°C, H=45~75% R.H

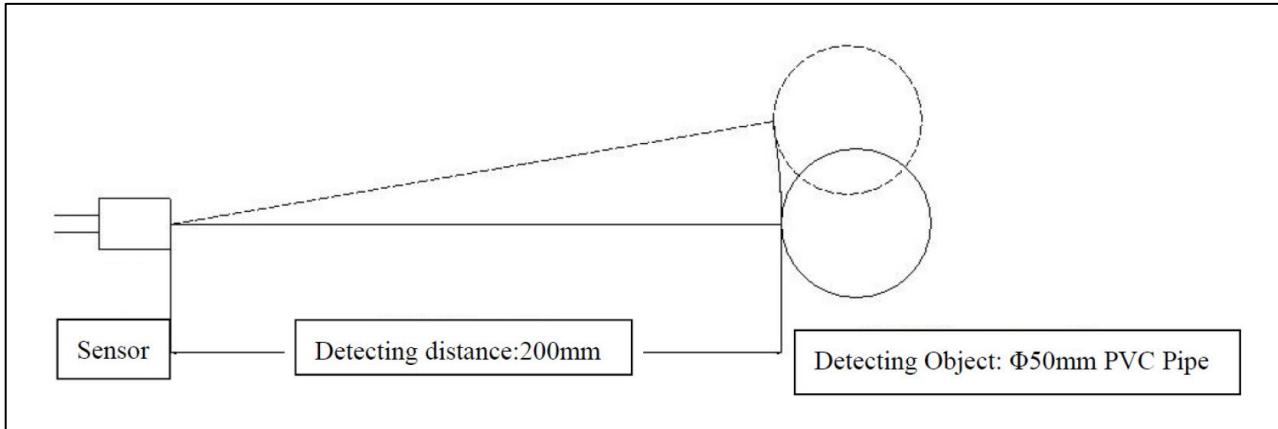
Dimensions (Units: mm, Tolerance: ± 0.5 mm unless otherwise stated)



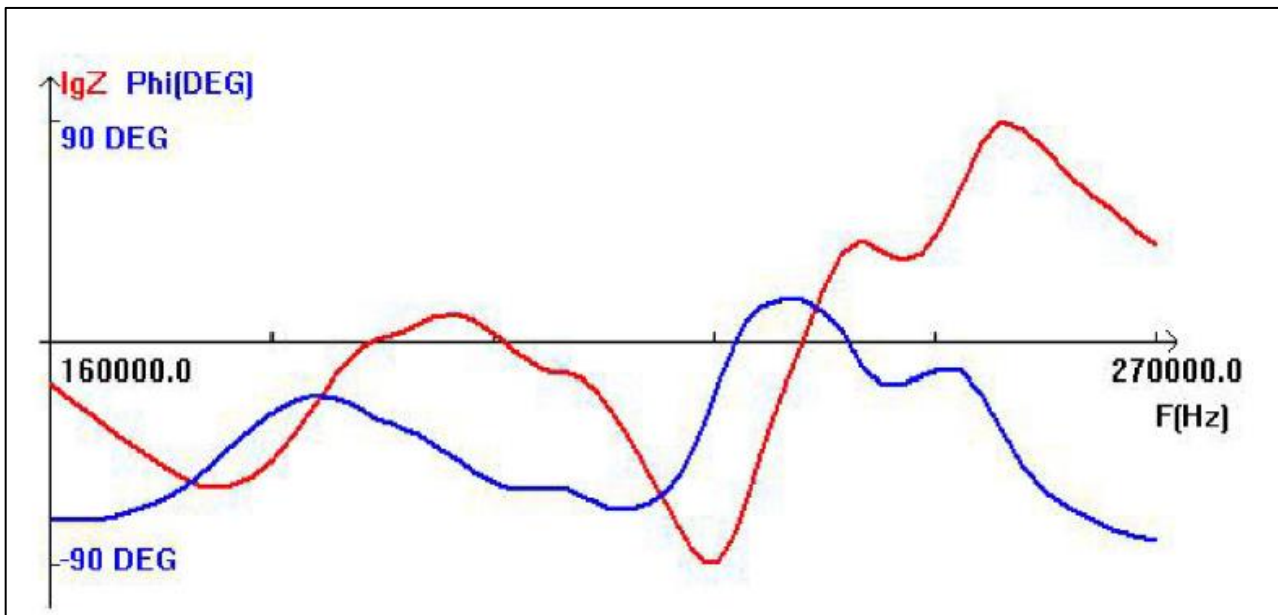
Reference Drive Signals



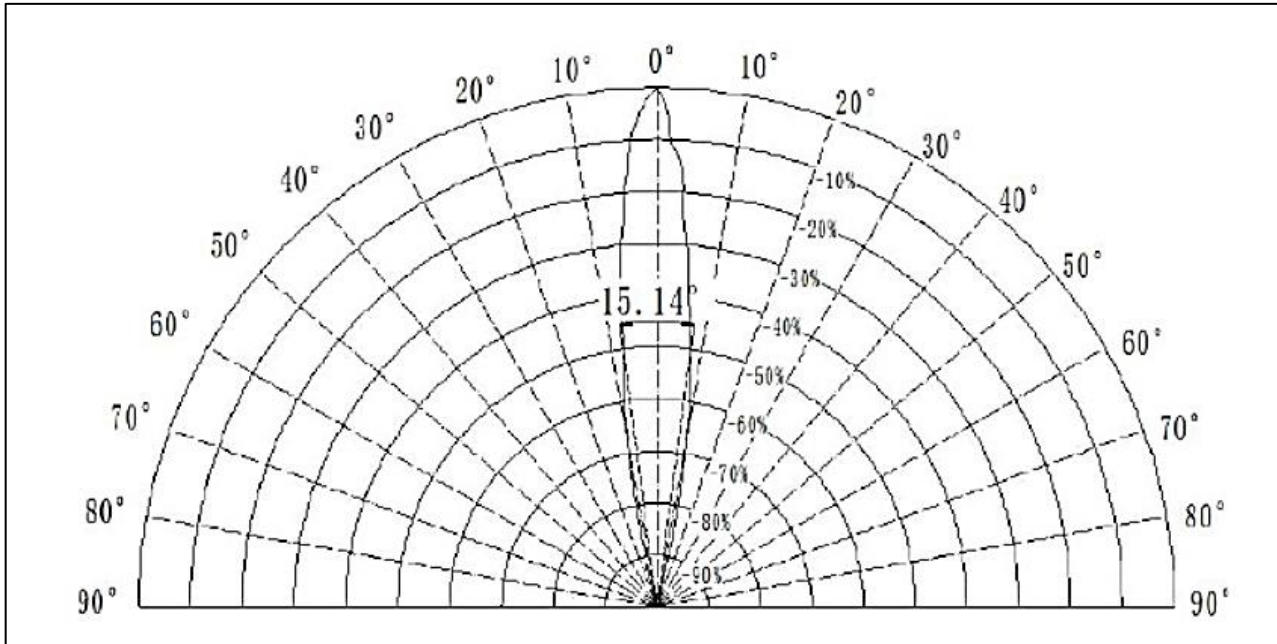
Direction Angle Test Diagram



Frequency - Impedance Response



Beam Angle Response



Reliability Testing

| Test | Test Specifications | Judgement |
|----------------------------------|--|---|
| Temperature Load Tests | | |
| Low Temperature Storage Test | -30°C ± 3°C, 240 hours | Allow 24 hours rest at room temperature before judgement. |
| High Temperature Storage Test | +70°C ± 2°C, 240 hours | |
| Low Temperature Operation Test | -40°C ± 3°C, 240 hours; 200 kHz, 120 ± 20 Vpp sine wave; 96 pulses / 30ms interval | 1) No abnormal changes in appearance (no deformation, cracking, corrosion, glue overflow, etc.) 2) Resonant frequency variation ≤ 1.5% 3) Sensitivity variation ≤ 30% |
| High Temperature Operation Test | +70°C ± 2°C, 240 hours; 200 kHz, 120 ± 20 Vpp sine wave; 96 pulses / 30ms interval | |
| High Temperature Resistance Test | +120°C ± 2°C, 15 minutes | Allow 4 hours rest at room temperature before judgement. 1) No obvious deformation in appearance |

| Mechanical Load Tests | | |
|---|--|--|
| Sine Vibration Test | Sweep: 10~150Hz, 1 octave / min, displacement 0.35mm, vibration in X, Y, Z directions; 20 cycles | Allow 4 hours rest at room temperature before judgement. 1) No abnormal changes in appearance (no deformation, cracking, corrosion, glue overflow, etc.) 2) Resonant frequency and sensitivity shall meet requirements of specification. |
| Drop Test | Drop height: 1.0 ± 0.05m, ±X, ±Y, ±Z (6 directions), 3x in each direction (18 total) | |
| Shock Test | Impact along ±X, ±Y, ±Z; 3x in each direction (18 total); half sine waveform, peak acceleration 100G, pulse time 11ms | |
| Static Pressure Resistance Test | Subject to 0.2Mpa for 1 hour | |
| Wire Tension Test | Tensile force of 4.9N applied between wires and sensor, 30 seconds | |
| Lifetime Tests | | |
| Constant Humidity and Heat Operation Test | +60°C ± 2°C, 90%RH, 400 hours; Driving signal: 200 kHz, 120 ± 20 Vpp sine wave; 96 pulses / 30ms interval | Allow 24 hours rest at room temperature before judgement. 1) No abnormal changes in appearance (no deformation, cracking, corrosion, glue overflow, etc.) 2) Resonant frequency variation ≤ 1.5% 3) Sensitivity variation ≤ 30% |
| Rapid Temperature Transformation Test | -30°C ± 3°C for 0.5 hours → raise temperature to +70°C ± 2°C within 3 minutes → remain at temperature for 0.5 hours → lower temperature to -40°C ± 3°C within 3 minutes; 240 cycles, parallel 3.9kΩ resistance at both ends of sensor. | |
| Flame Retardancy Test | Conduct Vertical combustion test; 10 seconds burning time, 2x for each test | Allow 24 hours rest at room temperature before judgement. 1) Shall meet grade V-0; residual flame time ≤ 10 seconds |

Packaging

20 pcs/tray

5 trays per case (100pcs)

12 cases per box (1200pcs)

Precautions

- a) Product designed only for use in air medium, not liquid mediums.
- b) Integration of an anti-interference function in the drive circuit is recommended.
- c) Ensure an anti-failure function is present in the application in case of malfunction.
- d) It is recommended to separate the product and application housing by a soft rubber ring.
 - a. Keep the product emitting surface free from external vibrations to prevent changes in performance.
- e) Do not use the product under the following conditions, to avoid any fault or performance degradation.
 - a. Strong impacts or vibration
 - b. Prolonged exposure to high temperatures and humidity
 - c. Corrosive gas or sea breeze
 - d. Soluble organic matter environments
 - e. Input voltages exceeding the specified maximum
 - f. Pressure environments exceeding the specified maximum pressure

Specifications Revisions

| Revision | Description | Date | Approved |
|----------|---|------------|----------|
| A | Released from Engineering | 10/20/2022 | |
| B | Revised Specifications, Performance Graphs, Reference Drive Signals, Reliability Testing, Precautions | 2/26/2024 | KM |

Note:

1. Unless otherwise specified:
 - A. All dimensions are in millimeters.
 - B. Default tolerances are $\pm 0.5\text{mm}$ and angles are $\pm 3^\circ$.
2. Specifications subject to change or withdrawal without notice.