



Data Sheet

TUM-1842L-HD

PUI Audio's all-new **HD Series** microphones use premium-grade MOSFETs and diaphragms for high sensitivity and superior signal-to-noise ratio. Each microphone features GSM buzz-blocking capacitors. Upgrade the ECM microphone that you use today with a PUI Audio **HD Series** microphone.

The 4mm diameter **TUM-1842L-HD** ECM is a back-electret cardioid/uni-directional microphone designed for extreme fidelity and focused recording of acoustic sources directly on-axis with the face of the microphone.

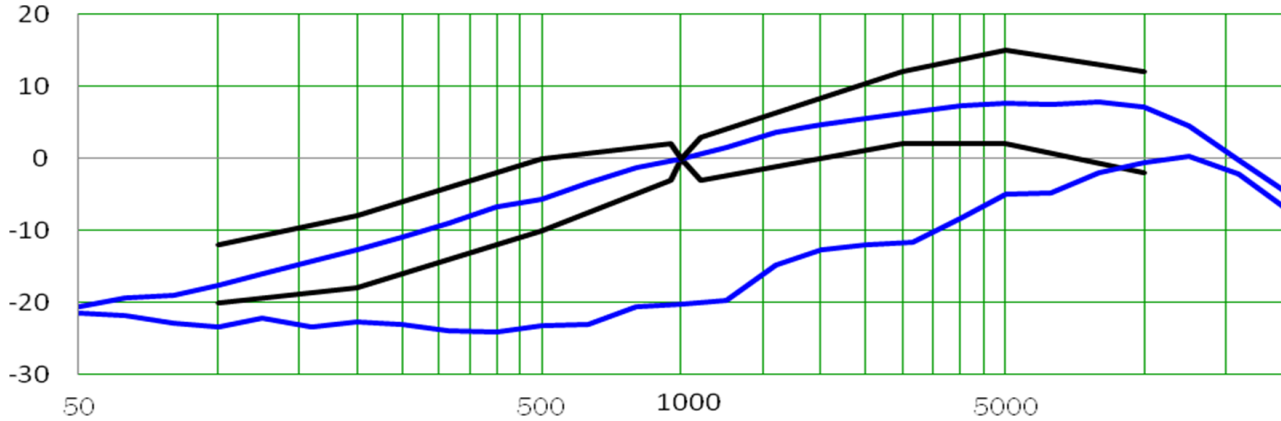
#### Features:

- Small, 4mm diameter
- Short, 1.8mm height
- -42dB sensitivity
- 59dB signal-to-noise ratio
- Cardioid pickup pattern

#### Specifications ( $V_{DD} = 2.0V$ , unless otherwise specified.)

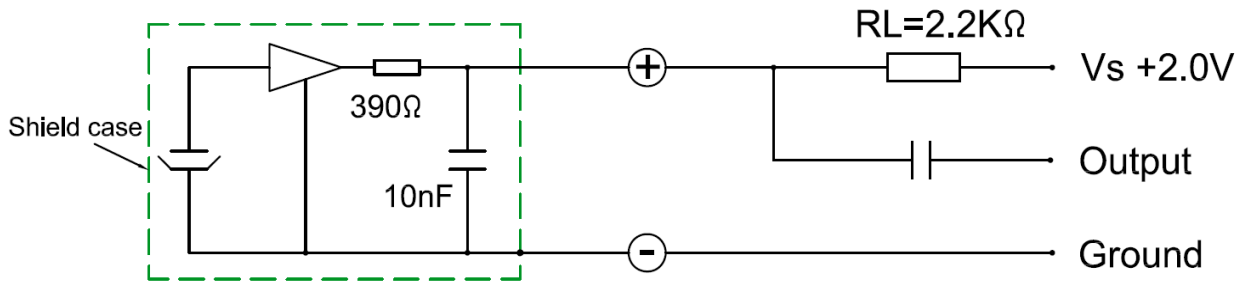
Parameter	Test Condition	Value	Unit
Sensitivity	94dB SPL $f_{IN} = 1 \text{ kHz}$ All operating modes	-45 (min) -42 (typ) -39 (max)	dBFS
Signal-to-Noise Ratio	$f_{IN} = 1 \text{ kHz}$ , 94dB SPL, A-weighted	59 (typ)	dB
Attenuation	$-180^\circ \pm 20^\circ$ from membrane's front surface	10 (min)	dB
Frequency Range	See Frequency Response Curve for response limits	20 – 20k	Hz
Acoustic Overload Point (AOP)	(1kHz, 10% THD)	115 (typ)	dB
Supply Voltage		2.0 (typ)	$V_{DD}$
Supply Voltage Range		1.5 (min) 10.0 (max)	$V_{DD}$
Supply Current	$V_{dd} = 2.0V$ , $R_L = 2.2k\Omega$	500 (typ)	$\mu A$
Operating Temperature		-20 (min) 70 (max)	$^\circ C$
Storage Temperature		-40 (min) 85 (max)	$^\circ C$

### Typical Frequency Response (Driven by a 94dB SPL excitation source)

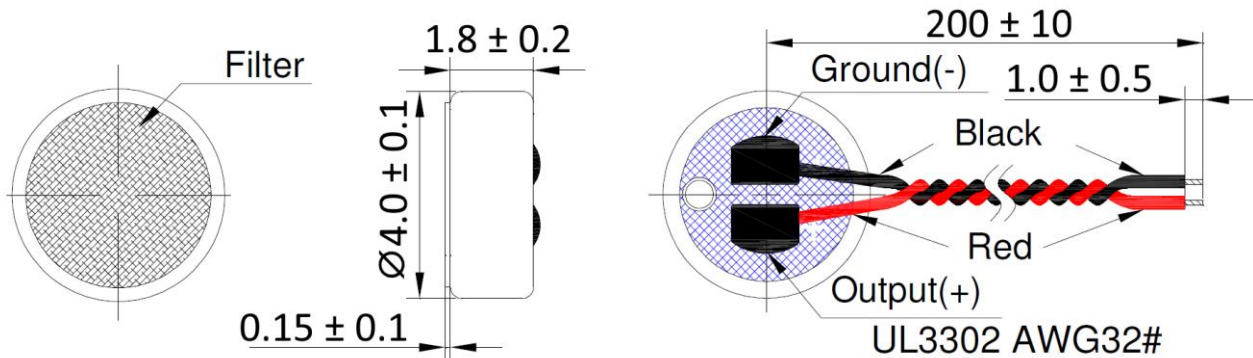


Frequency (Hz)	100	200	500	950	1000	1100	3000	5000	10000
Upper Limit (dB)	-12	-8	0	2	0	3	42	15	12
Lower Limit (dB)	-20	-18	-10	-3	0	-3	2	2	-2

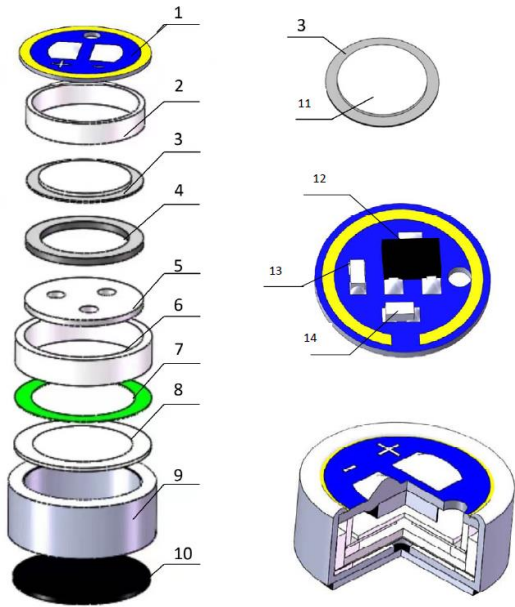
### Typical Application Circuit



### Dimensions (in mm)

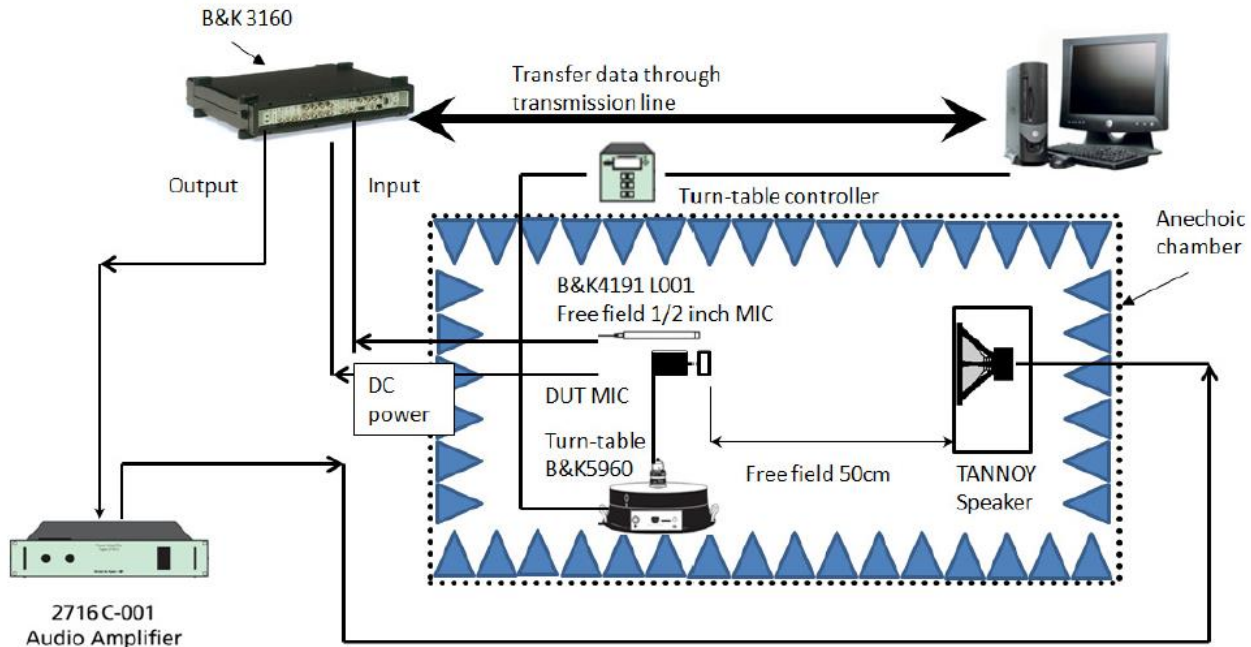


## Microphone Structure



Item	Name	QTY
1	PCB	1
2	Metal Ring 1	1
3	Plate	1
4	Metal Ring 2	1
5	Back Plate	1
6	Plastic Ring	1
7	Spacer	1
8	Diaphragm	1
9	Case	1
10	Filter	1
11	Silk cloth	1
12	FET	1
13	Capacitor	1
14	Resistance	1

## Measurement Method



Standard Conditions	Temperature	Humidity	Air Pressure
Environment Conditions	22±5°C	30% ≤ RH ≤ 70%	86kPa ≤ AP ≤ 106kPa
Arbitration Conditions	20±5°C	60% ≤ RH ≤ 70%	86kPa ≤ AP ≤ 106kPa

## Microphone Handling Precautions

High temperature and/or static electricity may damage microphones. To ensure careful handling, we suggest following these precautions:

- Ensure the power rating of the soldering iron is below 90 watts
- The temperature of the soldering iron must be limited to  $360^{\circ}\text{C} \pm 10^{\circ}\text{C}$  ( $680^{\circ}\text{F} \pm 50^{\circ}\text{F}$ )
- Soldering duration for each terminal shall be at or under 2 seconds
- Avoid the rear sound holes when soldering
- If practical, use a metal fixture to hold the microphone in-place and to act as a heatsink. A fixture should have appropriate diameter holes drilled through the entire fixture to prevent pressure from being placed on the diaphragm (as below)

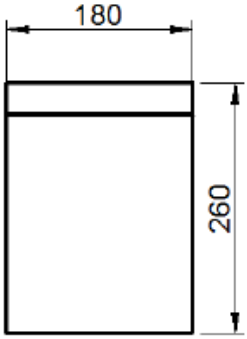
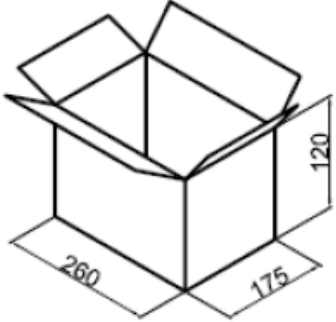
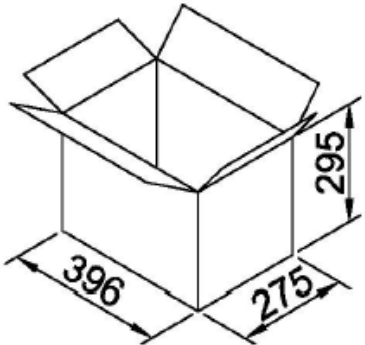


## Reliability Testing

Type of Test	Test Specifications
High Temperature Test	200 hours at $+70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ followed by two hours in normal room temperature
Low Temperature Test	200 hours at $-25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ followed by two hours in normal room temperature
Humidity Test	200 hours at $+40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ with relative humidity at 90% to 95% followed by 2 hours in normal room temperature
Temperature Cycle Testing	30 minutes at $-25^{\circ}\text{C}$ , 10 minutes at $20^{\circ}\text{C}$ , 30 minutes at $+70^{\circ}\text{C}$ , 10 minutes at $20^{\circ}\text{C}$ for five cycles, followed by 2 hours in normal room temperature
Vibration Test	10 to 55 Hz for 1 minute with 1.52mm distance, followed by a two-hour 3 axis test in packaging
Drop Test	Drop microphones in packaging onto concrete floor from 1 meter height in each of 3 axis
ESD Test (according to IEC 6100)	<ol style="list-style-type: none"><li>1. Contact discharge - Discharge 6000 VDC from capacitor into microphone output through <math>330\Omega</math> resistor ten times.</li><li>2. Air discharge - Discharge 8000 VDC into sound hole of the microphone ten times.</li></ol>

After each test, the speaker's SPL shall be  $\pm 3$  dB of the original SPL.

## Packaging

Packing		400	260 × 180	Anti-static
Middle Package		4000 (10 × 400)	250 × 170 × 140	Paper
Outer Package		16000 (4 × 4000)	396 × 275 × 295	Paper

### Specifications Revisions

Revision	Description	Date
A	Datasheet developed by Engineering	11/01/2023

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.
3. This part is RoHS 2015/863/EU Compliant.