



# PRODUCT CATALOGUE

**AUDIOWELL**  
SENSOR TECHNOLOGY

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## AUDIOWELL INTRODUCTION

Established in 1999, Audiowell Electronics (Guangdong) Co., Ltd. (NEEQ: 832491) is a leading provider of position, distance and speed sensor components and sensing solutions with focus on the research, design, production and sales of sensitive components, sensors and corresponding modular solutions.

As a sensor manufacturer and solution provider, Audiowell has the most comprehensive sensor component product line in China. Our ultrasonic sensors, flow sensors, electro-acoustic devices and ultrasonic transducer devices are market leaders and widely used in a variety of industries and fields including automotive electronics, instruments and meters, intelligent security systems and health appliances. While serving Chinese customers, we have also provided professional products and services for the global customers in many countries and regions.

Adhering to the business philosophy of “Be good, do better, create the best future”, we are committed to becoming a global major supplier of sensors (position, distance, speed) and will continuously concentrate on cutting edge technologies as well as advanced manufacturing techniques, to provide innovative and superior products for our society and create a safe, convenient and comfortable life for everyone.

Sensor technology shapes an intelligent life.

# SENSOR TECHNOLOGY



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# AUTOMOTIVE ELECTRONICS



Ultrasonic  
Parking Transducer



Ultrasonic  
Assembled Sensor



Ultrasonic Parking  
Assist Sensor



Ultrasonic Blind Spot  
Detection Sensor



ROA Ultrasonic  
Transducer



Life Detection  
Module



Ultrasonic DEF/AdBlue  
Quality Sensor



DEF/AdBlue  
Level Sensor



Ultrasonic Forward  
Collision Warning Sensor



Gasoline Level  
Sensor



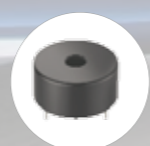
Dust Sensor



CO2 Sensor



Obstacle Avoidance  
Sensor



Buzzer



# AUTOMOTIVE ELECTRONICS

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04	Ultrasonic Assembled Sensor
05	Ultrasonic Parking Assist Sensor
06	Ultrasonic Blind Spot Detection Sensor
07	ROA Ultrasonic Transducer
08	Life Detection Module
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10	DEF/AdBlue Level Sensor
11	Ultrasonic Forward Collision Warning Sensor
12	Gasoline Level Sensor
13	Dust Sensor
14	CO2 Sensor
15	Obstacle Avoidance Sensor
16	Buzzer
17	Lineup



## Ultrasonic Parking Transducer

### Features

- Quality control standard of Automotive OEM manufacturers
- Outstanding consistency and stability
- High sensitivity and low power consumption

### Applications

- Reverse parking system
- Parking assist system



## Ultrasonic Assembled Sensor





### Features


- Integrated design, easy to install
- High sensitivity

### Applications

- Parking Distance Control(PDC)
- Reversing aid system



Model	TC0120-001	TC0121-002	TC0062-003	TC0223-000
Appearance				
Resonant frequency (kHz)	48	55.5	58	55.5
Direction angle (°)	X: 60 Y: 60	X: 90 Y: 45	X: 90 Y: 45	X: 90 Y: 45
Decay time (ms)	≤1.8	≤2.2	≤1.8	≤2.0
Size (mm)	Φ 15.5 x H9.0	Φ 15.5 x H9.0	Φ 14.0 x H9.0	Φ 15.5 x H9.0

Model	TK0139
Appearance	
Resonant frequency (kHz)	55.5±1
Direction angle (°)	X: 85 Y: 45
Decay time (ms)	0.9~1.5
Detection range* (m)	≥2.5

\*Φ 75mm tube measurement



## Ultrasonic Parking Assist Sensor

### Features

- Long detection range, up to 5m
- Built-in circuit which matches the self-developed transducer
- IP69 protection class, superior climate resistance, stability and anti-interference

### Applications

- Parking assist system



## Ultrasonic Blind Spot Detection Sensor





### Features

- Digital signal output
- Built-in circuit which matches the self-developed transducer
- IP69 protection class


### Applications

- Blind Spot Detection



Model	VU0001-001	VU0002-001	VU0004-001	VU0005-000
Appearance				
Frequency (Khz)	48	55.5	55.5	48
Direction angle (°)	X: 60 Y: 60	X: 90 Y: 45	X: 90 Y: 45	X: 60 Y: 60
Max. range* (mm)	5000	2500	2500	5000
Accuracy (cm)	≤ ±5	≤ ±5	≤ ±5	≤ ±5
Communication protocol	LIN 2.2	LIN 2.2	I/O	I/O
Protection class	IP69	IP69	IP69	IP69

\*Φ 75mm tube measurement

Model	VU0008-000
Appearance	
Frequency (Khz)	48
Direction angle (°)	X: 120 Y: 60
Max. range* (mm)	3500
Accuracy (cm)	≤ ±5
Communication protocol	I/O
Protection class	IP69

\*Φ 75mm tube measurement



## ROA Ultrasonic Transducer

### Features

- Quality control standard of Automotive OEM manufacturers
- Outstanding consistency and stability
- High sensitivity and low power consumption

### Applications

- Rear occupant alert system



## Life Detection Module

### Features

- High sensitivity, quickly detect breathing or small movements
- Not affected by light, temperature and humidity
- Low power consumption

### Applications

- Rear occupant alert system



Model	TO0101-004&TO0104-004	TO0019-000&TO0020-000
Appearance		
Frequency (Khz)	40±1.0	40±1.0
S.P.L (dB)	117~122	≥115
Sensitivity (dB)	-60~-55	≥65
Operating TEMP. (°C)	-40~+90	-40~+90
Housing material	ABS	ABS
Size (mm)	Φ 10.0 X 7.1	Φ 16.0 X 12.0

Model	UM0040
Detection range (m)	1.8m (Wave speed angle0°) 1m (Wave speed angle30°)
Detection speed (s)	8
Voltage (V)	12
Current (mA)	40



## Ultrasonic DEF/AdBlue Quality Sensor

### Features

- High accuracy
- High reliability

### Applications

- SCR system for Diesel Engines



## DEF/AdBlue Level Sensor


### Features


- Continuous measurement
- High accuracy (Four times as high as the traditional liquid level sensors)
- No moving part

### Applications

- SCR system for Diesel Engines



Model	UQ0008-000
Appearance	
Frequency (Khz)	760±30
Resonant impedance (Ω)	≤340
Accuracy	±1%
Input voltage (Vp-p)	≤5

Model	UM0059-000
Appearance	
Measurement range (mm)	40~500
Accuracy (mm)	±5
Response time (s)	≤2
Power (V)	12



## Ultrasonic Forward Collision Warning Sensor

### Features

- Long detection range, up to 5m
- Built-in circuit which matches the self-developed transducer
- IP69 Protection class

### Applications

- Forward Collision Warning



## Gasoline Level Sensor


### Features

- External measurement
- Continuous measurement


### Applications

- Automotive fuel tank monitoring
- Oil tank monitoring



Model	VU0001-001	VU0005-000
Appearance		
Frequency (Khz)	48	48
Direction angle (°)	X: 60 Y: 60	X: 60 Y: 60
Max. range* (mm)	5000	5000
Accuracy (cm)	≤ ±5	≤ ±5
Communication Protocol	LIN 2.2	I/O
Protection class	IP69	IP69

\*Φ 75mm tube measurement

Model	AW9Y200K01-01
Appearance	
Resonant frequency (Mhz)	2
Capacitance (pF)	1600±15%
Impedance (Ohm)	5±2
Operating Temp (°C)	-40 ~ +80
Size (mm)	Φ 30×20



## Dust Sensor

### Features

- Independent detection of two channels, simultaneous detection of PM2.5 concentration inside and outside the car
- Real-time continuous measurement, refresh rate 1s/time
- High sensitivity

### Applications

- Automotive Environmental System



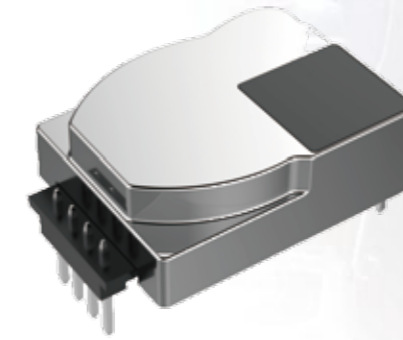
## CO2 Sensor


### Features


- Excellent precision
- Good consistency

### Applications

- Automotive Environmental System



Model	DL0002-000
Appearance	
Type	Laser
Input voltage (V)	8~18
Detection range (μm)	TYP 2.5 MIN 1.0 MAX 10
Output mode	Digital signal
Operating Temp (°C)	-20~+70
Size (mm)	98×74×24

Model	GC0001
Appearance	
Effective range (ppm)	0 ~ 3000
Max. Range (ppm)	0 ~ 5000
Accuracy (ppm)	± 50+5%
Input voltage (V)	(DC)+4.7 to +5.3
Current consumption (mA)	≤150
Size (mm)	33x20x9.2



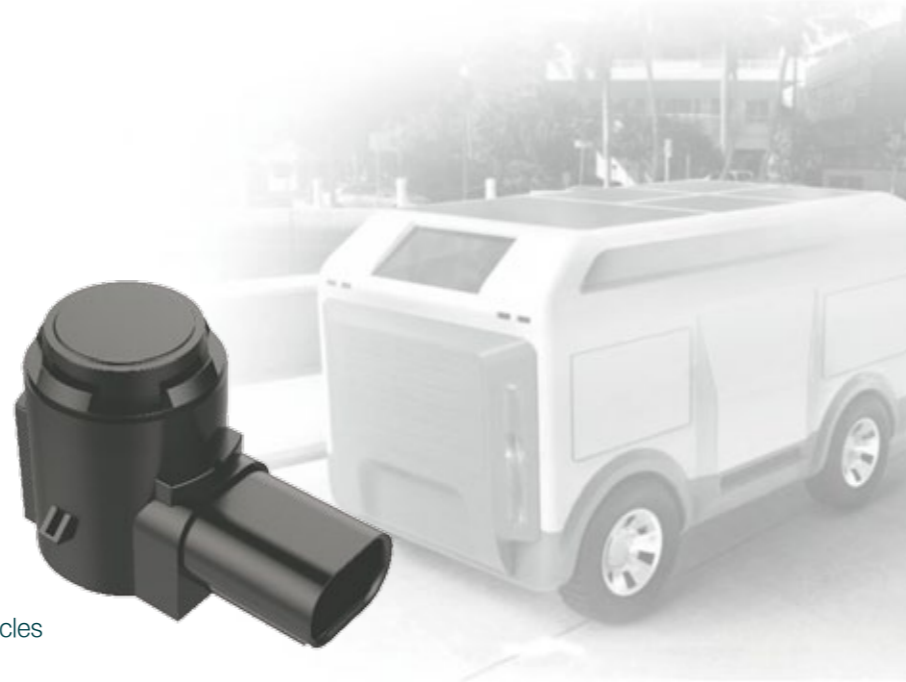
## Obstacle Avoidance Sensor

### Features

- Built-in digital signal output
- self-check signal function and comes with a suitable circuit to optimize the performance of the sensor
- Simple structure, easy to install

### Applications

- Autonomous driving system for unmanned vehicles



## Buzzer

### Features

- High reliability
- Small size, easy to install

### Applications

- Car security system



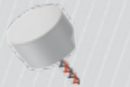








Model	VU0001-001	VU0002-001	VU0004-001	VU0005-000
Appearance				
Frequency (Khz)	48	55.5	55.5	48
Direction angle (°)	X: 60 Y: 60	X: 90 Y: 45	X: 90 Y: 45	X: 60 Y: 60
Max. range* (mm)	5000	2500	2500	5000
Accuracy (cm)	≤ ±5	≤ ±5	≤ ±5	≤ ±5
Communication Protocol	LIN 2.2	LIN 2.2	I/O	I/O
Protection class	IP69	IP69	IP69	IP69

\*Φ 75mm tube measurement

Model	QJ0853	QJ0861	QJ0890	QJ0855
Appearance				
Frequency (Hz)	2000	3200	2000	800
S.P.L (dB)	≥100(10cm)	≥98(30cm)	≥80(100cm)	88(50cm)
Driving voltage	30Vp-p	12VDC	12Vp-p	12VDC
Size (mm)	Φ30×13.5	Φ42×16.5	38.5×30×27.6	Φ43.2×16.8



# Lineup

Products	Appearance	Parking system	Parking assist system	BSD system	SCR system			FCW system	ROA system	Fuel tank monitoring	Environmental system	Obstacle Avoidance System for AGV	Anti-theft alarm system
Ultrasonic Transducer		■	■	■									
Ultrasonic Sensor		■	■	■								■	
Open Type Ultrasonic Transducer									■				■
DEF/AdBlue Quality Sensor					■								
DEF/AdBlue Level Sensor					■								
Gasoline Level Sensor										■			
Dust Sensor											■		
CO2 Sensor											■		
Buzzer		■	■	■	■			■	■				■

# INTELLIGENT METERING



## INTELLIGENT METERING

21	Transducer for Ultrasonic Flow Meter
22	Transducer for Ultrasonic Heat Meter
23	Transducer for Industrial Ultrasonic Heat Meter
24	Brass Pipe for Ultrasonic Heat Meter
25	Temperature Sensor
26	Transducer for Ultrasonic Water Meter
27	Plastic Pipe for Ultrasonic Water Meter
28	Ball Valve for Water Meter
29	Transducer for Ultrasonic Gas Meter
30	Pipe for Ultrasonic Gas Meter
31	Doppler Sensor
32	Lineup



## Transducer for Ultrasonic Flow Meter

### Features

- High reliability
- High and low temperature resistance

### Applications

- Ultrasonic flow sensor



## Transducer for Ultrasonic Heat Meter

### Features




- Good consistency
- Stable performance
- High reliability

### Applications

- Ultrasonic heat meter



Model	HN0536-004	HN0635-000	HN0636-004
Frequency (MHz)	1.00±0.02	1.015±0.03	1.015±0.03
Resonant impedance (Ω)	≤50	≤50	≤50
Static capacitance (pF)	710±20%	1350±20%	1150±20%
Size (mm)	Φ10.0×1.0	Φ15.5×1.02	Φ14.0×1.01

Model	US0002	US0004	US0014
Appearance			
Frequency (Khz)	975±30	975±30	975±30
Operating Temp (°C)	+4~+90	+4~+90	+4~+90
Pressure Resistance (MPa)	1.6	2.5	2.5
Installation diameter (mm)	Φ18.2	Φ16.8	Φ16.8



## Transducer for Industrial Ultrasonic Heat Meter

### Features

- High and low temperature resistance
- High reliability

### Applications

- Ultrasonic heat meter



## Brass Pipe for Ultrasonic Heat Meter

### Features



- Stable performance
- Good consistency

### Applications

- Ultrasonic heat meter



Model	US0012	US0017
Appearance		
Frequency (Khz)	975±30	975±30
Operating Temp (°C)	+4~+120	+4~+130
Pressure Resistance (MPa)	4.0	3.5
Installation diameter (mm)	Φ 18.0	Φ 17.0

Model	HS0002	HS0003
Appearance		
Pressure Resistance (Mpa)	1.6	1.6
Operating Temp. (°C)	0~+90	0~+90
Detection range (m <sup>3</sup> /h)	0.07~7.00	0.07~7.00
Nominal diameter	DN 20	DN 25

## Temperature Sensor

### Features

- Stable performance
- High reliability

### Applications

- Ultrasonic heat meter



## Transducer for Ultrasonic Water Meter


### Features




- Resistant to harsh environmental conditions such as high and low temperature, humidity, shock, and vibration
- Meet the requirements of a wide range ratio water meter
- Good consistency

### Applications

- Ultrasonic water meter



Model	HQ0057
Appearance	
Accuracy (°C)	≤0.1
Insulation resistance (MΩ)	100
Type	PT 1000
Operating Temp. (°C)	+4~+90

Model	US0039	US0072	US0078
Appearance			
Frequency (KHz)	975±30	1090±20	2110±30
Pressure Resistance (Mpa)	2.5	2.5	2.5
Operating Temp (°C)	0.1~+90	0.1~+90	0.1~+90
Installation diameter (mm)	Φ 16.8	Φ 16.8	Φ 10.0



## Plastic Pipe for Ultrasonic Water Meter

### Features

- Stable performance
- Good consistency

### Applications

- Ultrasonic water meter



## Ball Valve for Water Meter

### Features


- Continuous regulation
- No moving parts

### Applications

- Ultrasonic water meter



Model	HS0014	HS0016	HS0017
Appearance			
Pressure Resistance (MPa)	1.6	1.6	1.6
Operating temperature (°C)	0.1~+50	0.1~+50	0.1~+50
Pressure loss (Kpa)	≤ 40	≤ 40	≤ 40
Nominal diameter	DN 15	DN 20	DN 25

Model	HZ0021
Appearance	
Pressure Resistance (MPa)	1.6
Installation Length (mm)	64.5
Operating Temp (°C)	0.1~+50
Nominal diameter	DN15



## Transducer for Ultrasonic Gas Meter

### Features

- High sensitivity
- Strong directivity
- Corrosion resistant material, suitable for various gas

### Applications

- Ultrasonic gas meter



## Pipe for Ultrasonic Gas Meter




### Features


- Stable performance
- Good consistency

### Applications

- Ultrasonic gas meter



Model	HT0008	HT0013	HT0017
Appearance			
Frequency (KHz)	230±20	195±15	540±30
Pressure Resistance (MPa)	0.2	0.2	0.2
Operating Temp (°C)	-25~+70	-25~+55	-25~+55
Transmitting surface (mm)	Φ9.6	Φ14.1	Φ10.8

Model	HZ0015
Appearance	
Frequency (KHz)	500
Input voltage (V)	10~30
Pressure Resistance (KPa)	≤10
Operating Temp (°C)	-10~+40



## Doppler Sensor

### Features

- Good consistency
- Stable performance
- Easy to install

### Applications

- Deep sea flow monitoring system



Model	US0055-000
Appearance	
Frequency (KHz)	600±20
Resonant impedance (Ω)	≤55
Max. input voltage (V <sub>P-P</sub> )	5
Operating Temp (°C)	+4~+85

## Lineup

Model	Appearance	Ultrasonic Heat Meter	Ultrasonic Water Meter	Ultrasonic Gas Meter	Deep sea flow detection system
Transducer for Ultrasonic Flow Meter		■	■		
Transducer for Ultrasonic Heat Meter		■			
Transducer for Industrial Ultrasonic Heat Meter		■			
Brass Pipe for Ultrasonic Heat Meter		■			
Temperature Sensor		■			
Transducer for Ultrasonic Water Meter			■		
Plastic Pipe for Ultrasonic Water Meter			■		
Ball Valve for Water Meter			■		
Transducer for Ultrasonic Gas Meter				■	
Pipe for Ultrasonic Gas Meter				■	
Doppler Sensor					■



# INTELLIGENT HOME



Liquid Auto-Fill  
Control Module



Ultrasonic  
Rangefinder



Infrared  
Dust Sensor



Laser  
Dust Sensor



Carbon Dioxide  
Sensor



300KHz  
Ultrasonic Sensor



Liquid Level  
Managing Module



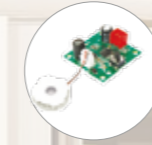
Ultrasonic Atomizing  
Transducer



Ultrasonic  
Atomizer



Microporous Atomizing  
Transducer



Microporous  
Atomizing Module



Piezoelectric  
Pump



Dual Paper  
Detection Sensor



Directional Speaker  
Ultrasonic Sensor



Ultrasonic Flow  
Sensor Module



Buzzer



# INTELLIGENT HOME

35	Liquid Auto-Fill Control Module
36	Ultrasonic Rangefinder
37	Infrared Dust Sensor
38	Laser Dust Sensor
39	CO2 Sensor
40	300KHz Ultrasonic Sensor
41	Liquid Level Managing Module
42	Ultrasonic Atomizing Transducer
43	Ultrasonic Atomizer
44	Microporous Atomizing Transducer
45	Microporous Atomizing Module
46	Piezoelectric Pump
47	Dual Paper Detection Sensor
48	Directional Acoustic Ultrasonic Sensor
49	Ultrasonic Flow Sensor Module
50	Buzzer
51	Lineup



## Liquid Auto-Fill Control Module

### Features

- Non-contact measurement
- Short response time

### Applications

- Water dispenser, Coffee machine



## Ultrasonic Rangefinder



### Features



- Outstanding directivity
- Non-contact measurement

### Applications

- Robot
- UAV



Model	UM0034-000	UM0034-002
Appearance		
Measuring range (mm)	20~250	20~1000
Enter response time (s)	≤3	≤3
Leave response time (s)	<2	<2
Working Current (mA)	≤12	≤9
Operating Temp (°C)	0~85	0~85

Model	UM0090	UP0152-000
Appearance		
Measuring range (mm)	150~1500	20~2500
Accuracy (mm)	10	10
Working Current (mA)	≤10	≤10
Power Supply (V)	5	5
Response time (ms)	<1	2



## Infrared Dust Sensor

### Features

- High sensitivity
- Excellent consistency

### Applications

- Air purifier
- Air conditioners
- Ventilation system



## Laser Dust Sensor




### Features



- Excellent consistency
- High accuracy

### Applications

- Air purifier
- Fresh air system



Model	DW0001	DW0002	DC0001
Appearance			
Operating voltage (V)	DC 5±5%	DC 5±0.1	DC 5V ±5%
Detectable Partical Diameter (μm)	TYP 2.5 MIN 1.0	1.0~10	TYP 2.5 MIN 0.5
Signal output method (ms)	Analog output	Digital output(UART/PWM)	Analog output
Size (mm)	46.2x34.0x17.6	46.2x34.0x17.6	59.0x44.6x17.3

Model	DL0001	DL0003
Appearance		
Measuring range of particles (μm)	0.3~10	0.3~10
Effective range of particle mass concentration (μg/m <sup>3</sup> )	0~500	0~500
Max. range of particle mass concentration (μg/m <sup>3</sup> )	1000	1000
Supply voltage (V)	5	5
Working Current (mA)	≤ 100	≤ 100
Size (mm)	48.4x38.4x24.0	48.4x38.4x11.8



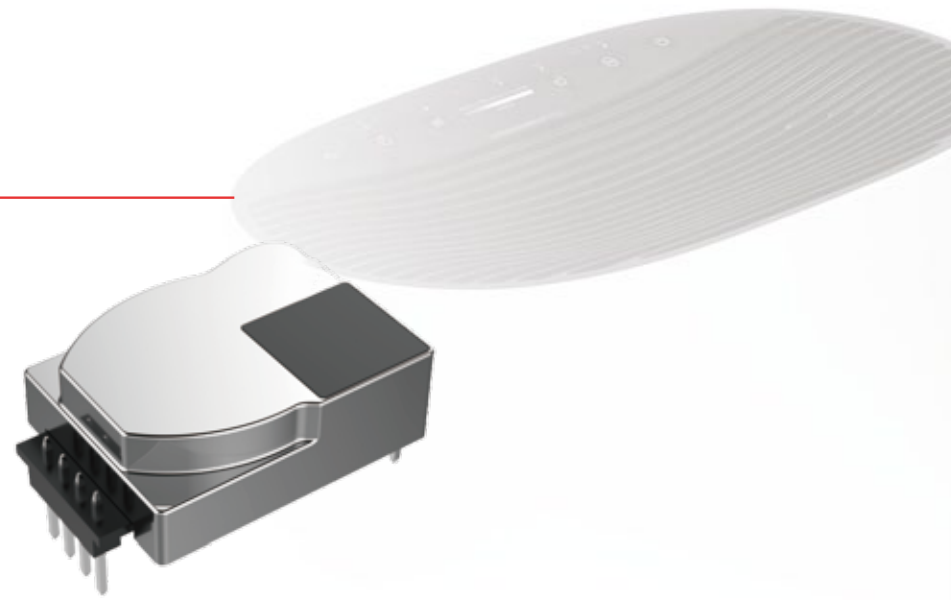
## CO2 Monitoring Sensor

### Features

- Large detection range
- High precision

### Applications

- Air purifier
- Fresh air system



## 300KHz Ultrasonic Sensor


### Features


- Special matching materials
- Small blind zone
- Good directive
- Excellent consistency

### Applications

- Sweeping robot



Model	GC0001
Appearance	
Detective range of detection (ppm)	0 ~ 3000
Max. range of detection (ppm)	0 ~ 5000
Accuracy (ms)	± (50+5%)
Supply voltage (V)	(DC)+4.7 to +5.3
Working current (mA)	≤150
Size (mm)	33x20x9.2

Model	HT0020-000
Appearance	
Frequency (KHz)	300
Decay time (us)	≤190
Driving voltage (Vp-p)	12
Capacitance (nF)	1.3±20%
Size (mm)	Φ16.0 x H12.0



## Liquid Level Managing Module

### Features

- High precision
- Small blind zone
- Short response time

### Applications

- Sweeping robot
- Smart cleaning machine



## Ultrasonic Atomizing Transducer

### Features

- The stable temperature of transducer ensures stable work.
- Advanced electrode protective film is suitable for all kinds of different water.

### Applications

- Humidifier
- Aroma Diffuser



Model	UM0105
5V power requirements (V)	4.5-5.5V, 30mA
Power (W)	≤0.1
Level signal output voltage (V)	3.3-5.5
Level signal output current (mA)	≤2
Operating Temp (°C)	+5~-60

Model	HL0020-004	HL0001-001	HL0013-085	HL0015-000	HL0017-010
Frequency (MHz)	2.4	3	1.7	1.7	2.4
Lead length (mm)	50±5	50±5	100±5	88±5	100±5
Terminal	XH-2P	XH-2P	/	/	/
Diameter (mm)	16	16	20	25	25



## Ultrasonic Atomizer

### Features

- Compact size
- High conversion efficiency
- Anti-dry protection
- Digital signal control

### Applications

- Humidifier
- Aroma Diffuser



## Microporous Atomizing Transducer



### Features

- Fine atomized particles
- High through hole rate, up to 97%
- Acid resistance, alkali resistance and cavitation corrosion resistance

### Applications

- Humidifier
- Aroma Diffuser



Model	UM0108-000	UM0108-003
Appearance		
Power supply (V)	24±0.3	24±1.2, 5V-5.5V
Transducer frequency (Mhz)	1.7±0.05	1.7±0.05
Max operating current (A)	0.58±0.07	0.65±0.07
Atomization volume (mL/H)	250-350	360±20%

Model	HQ0047-016	HQ0064-015
Appearance (MHz)	109±5	110±5
Capacitance (pF)	3800±20%	3200±20%
Impedance (Ω)	≤ 180	≤ 180
size (μm)	7±1	6.5±1
Diameter (mm)	20	20



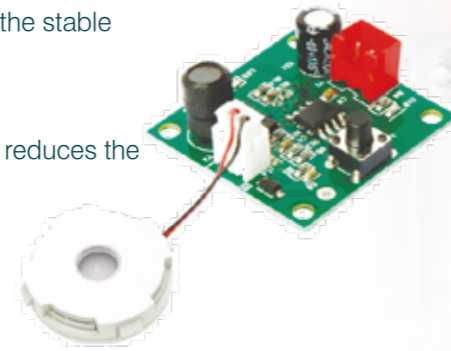
## Microporous Atomizing Module

### Features

- Frequency-follow and low-power circuit,ensure the stable performance.
- Special driving circuit and save power.
- Optimizing the configration and function, which reduces the heat and failure rate.

### Applications

- Aroma Diffuser
- Facial sprayer



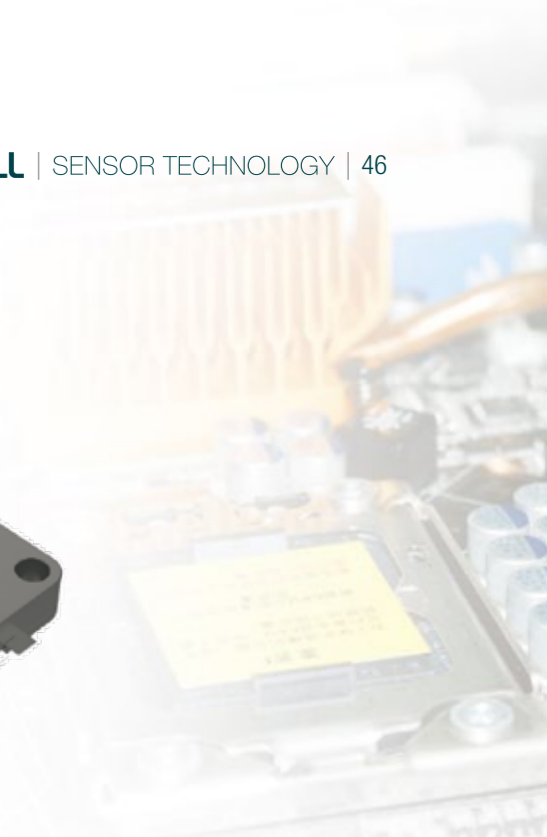
## Piezoelectric Pump


### Features


- Small and lightweight
- Adjustable driving voltage for the regulation of air pressure and air flow in accordance with actual work requirement
- Concentrated air flow

### Applications

- Small-size aromatherapy machine
- Heat dissipation of core chips
- Micro-flow test instrument



Model	UP0096-000
Appearance	
Power (DC)	DC :5±0.3V/1A
Working current (mA)	300±80
Transducer frequency (KHz)	100~120
Functions	Auto off when no water
Power (DC)	DC :5±0.3V/1A

Model	HQ0067
Appearance	
Resonant frequency (KHz)	24±2
Resonant impedance (Ω)	≤200
Operating voltage (Vp-p)	10~20
Static pressure (kPa)	≥1.0
Flow rate (L/min)	≥0.3
Size (mm)	21x21x4



## Dual Paper Detection Sensor

### Features

- Special matching materials
- Small blind zone
- Excellent directivity
- Excellent consistency

### Applications

- Printer



## Ultrasonic Sensor for Directional Speaker


### Features

- Excellent directive, directional transmission
- Not affected by electromagnetic fields

### Applications

- Directional speaker



Model	HT0020
Appearance	
Frequency (KHz)	300
Decay time ( $\mu s$ )	$\leq 190$
Driving voltage (Vp-p)	12
Capacitance (nF)	1.3
Operating Temp ( $^{\circ}C$ )	-20~+70

Model	TO0123-001	TO0019-009	TO0139-000
Resonant frequency (KHz)	40 $\pm$ 1	40 $\pm$ 1	40 $\pm$ 1
S.P.L (dB)	$\geq 115$	$\geq 115$	$\geq 117$
Max. input voltage (Vrms)	20	20	20
Static capacitance (pF)	2500 $\pm$ 20%	2100 $\pm$ 20%	2200 $\pm$ 20%
Operating Temp ( $^{\circ}C$ )	-20~+70	-20~+70	-40~+85
Size (mm)	$\Phi 16.0 \times H 12.0$	$\Phi 16.0 \times H 12.0$	$\Phi 8.0 \times H 6.0$



## Ultrasonic Flow Sensor Module

### Features

- Measuring pipe made of molded engineering plastic to ensure high ruggedness and reliability
- Up to 2% accuracy and immunity to environment impact
- Turndown ratio up to 160
- Approved for drinking water
- Digital output with M-BUS serial communication

### Applications

- Smart water management system
- Leakage detection



## Buzzer

### Features

- Small size, easy to install
- Stable performance

### Applications

- Home appliance alarm

















Model	FS0001	FS0002	FS0009	FS0010
Appearance				
Diamete	DN15	DN10	DN20	DN25
Power Supply (V)	3.2~5.3	3.2~5.3	3.2~5.3	3.2~5.3
Flow Range (L/h)	2.5~2500	2.0~1600	2.5~4500	2.5~6000
Accuracy (mm)	≤±5% (15~25L/h) ≤±3.5% (25~50L/h) ≤±2% (50~2500L/h)	≤±5% (15~25L/h) ≤±3.5% (25~50L/h) ≤±2% (50~1600L/h)	≤±5% (20~40L/h) ≤±3.5% (40~100L/h) ≤±2% (100~4500L/h)	≤±5% (30~50L/h) ≤±3.5% (50~100L/h) ≤±2% (100~6000L/h)
Max. Operating Pressure (Mpa)	1.6	1.6	1.6	1.6
Communication method	TTL	TTL	TTL	TTL

Model	QJ0410-007	QJ0411-010
S.P.L (dB)	70	85
Detection range (cm)	10	10
Static capacitance (pF)	14000±30%	15000±30%
Max. input voltage (Vp-p)	25	20
Operating Temp (°C)	-20~+105	-40~+85
Size (mm)	56.0×44.5 x 33.5	Φ13.8×6.4



## Lineup

Model	Appearance	Water dispenser, Coffee machine	Refrigerator	Air purifier, HVAC	Sweeper robot	Robot, UAV			Humidifier, Aroma Diffuser	Aroma Diffuser Facial sprayer	Chip heat dissipation	Printer	Directional speaker	Smart water management
Liquid Auto-Fill Control Module		■	■											
Ultrasonic Rangefinder						■								
Dust Sensor				■										
CO2 Sensor				■										
300KHz Ultrasonic Sensor					■							■		
Liquid Level Managing Module					■									
Atomizing Transducer				■				■	■					
Ultrasonic Atomizer				■				■	■					
Microporous Atomizing Transducer									■					
Microporous Atomizing Module									■					
Piezoelectronic Pump											■			
Ultrasonic Sensor						■							■	
Ultrasonic Flow Sensor Module		■	■											■
Buzzer		■	■	■	■			■	■					



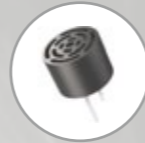
# INTELLIGENT SECURITY



Piezoelectric  
Ceramic Element



Piezoelectric  
Buzzer



Ultrasonic  
Ranging Sensor



High SPL Buzzer



# INTELLIGENT SECURITY

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Piezoelectric Ceramic Element

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Piezoelectric Buzzer

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Ultrasonic Ranging Sensor

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High SPL Buzzer

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Lineup



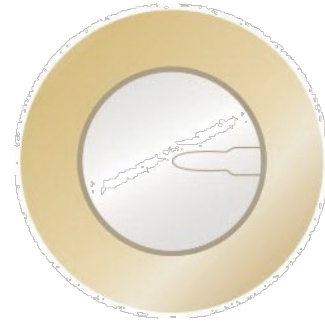
## Piezoelectric Ceramic Element

### Features

- Small size, easy to install
- Stable performance

### Applications

- Smoke alarm detector



## Piezoelectric Buzzer

### Features

- High reliability
- The material is resistant to high temperatures and has good flame retardancy
- Pass UL standard

### Applications

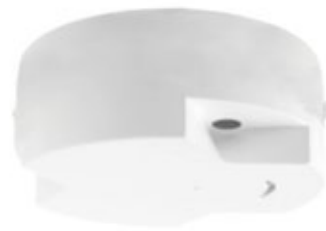
- Smoke alarm detector



Model	PL0544-014	PL0653-000	PL0663-000
Resonant frequency (Hz)	3.2	3.2	3
Resonant impedance (Ω)	600	350	400
Static capacitance (pF)	25000±30%	36000±30%	40000±30%
Diameter (mm)	34.55	34.7	34.7
Thickness (mm)	0.54	0.52	0.53

Model	QJ0868
Resonant frequency (Hz)	3250
S.P.L (dB)	≥ 105(12V/25cm)
Max. input voltage (V)	16
Max. Rated Current (mA)	40
Size (mm)	Φ 30.6 x 16.0





## Ultrasonic Ranging Sensor

### Features

- High sound pressure
- Cost-effective
- Good immunity to interference

### Applications

- Smoke alarm detector



## High SPL Buzzer


### Features

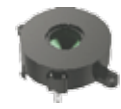
- High sound pressure
- High and low temperature resistance

### Applications

- Airport bird repellent



Model	TO0116-009
Appearance	
S.P.L (dB)	≥ 105
Sensitivity (dB)	≥ -75
Resonant frequency (kHz)	40.0±1.0
Capacitance (pF)	1700±20%
Operating Temp (°C)	-40 ~ +85
Size	Φ10.0 x H 7.1

Model	QJ0892-000
Appearance	
S.P.L (dB)	≥ 110
Sensitivity (kHz)	2.40±0.5
Resonant frequency (pF)	186000±30%
Operating Temp (°C)	-40 ~ +105
Size	Φ45.3 x 22



## Lineup

Model	Appearance	Smoke alarm detector	Strong sound expeller	Security system
Piezoelectric Ceramic Element		■		
Buzzer		■		
High SPL Buzzer			■	■
Ultrasonic Ranging Sensor		■		

## INDUSTRIAL CONTROL



Ultrasonic Proximity Sensor



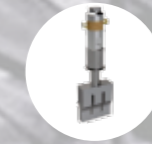
Flow Control Sensor Module



Seismic Hydroacoustic Geophone



Ultrasonic Welding Transducer



Welding Transducer Module



77GHz Millimeter wave radar



Buzzer







## INDUSTRIAL CONTROL

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## Ultrasonic Proximity Sensor

### Features

- Continuous measurement
- Transparent objects can be detected
- High measurement accuracy

### Applications

- Production line testing



Model	AU0009-001	AU0011-002
Appearance		
Operating Frequency (kHz)	60	255
Detection Range (mm)	20~350	50~250
Detection Accuracy (mm)	≤10	≤10
Operating Voltage (V)	12~30	12~30
Communication Protocol	MPN	485



## Flow Control Sensor Module

### Features

- Real-time monitor, Cloud data transmission
- Remote control, Visual adjustment
- Not affected by the viscosity, conductivity of the medium

### Applications

- Plant water management



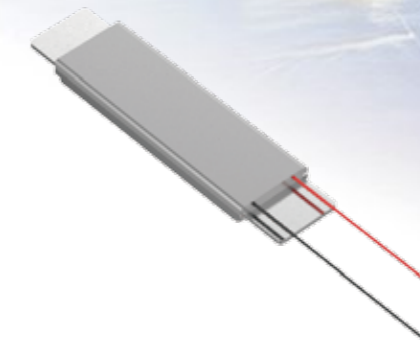
## Seismic Hydroacoustic Geophone


### Features


- High reliability
- High sensitivity, small vibration and shock can be detected
- High strength structure ensures service life

### Applications

- Ocean landform exploration



Model	FS0021
Appearance	
AUTO mode The steady flow error (L/h)	±5
Update frequency of flow data (HZ)	8
Operating Voltage (V)	5
Opening (closing) time of ball valve (s)	≤ 15
Max.power consumption (W)	2.5
Communication Protocol	485

Model	US0076
Appearance	
Operating Frequency (KHz)	14±1.5
Sensitivity (dB)	-192.5±1.5( 0-1KHz)
Insulation resistanc (MΩ)	≥10000
Free capacitance (pF)	9.3±5%
Max. allowable water depth (m)	250



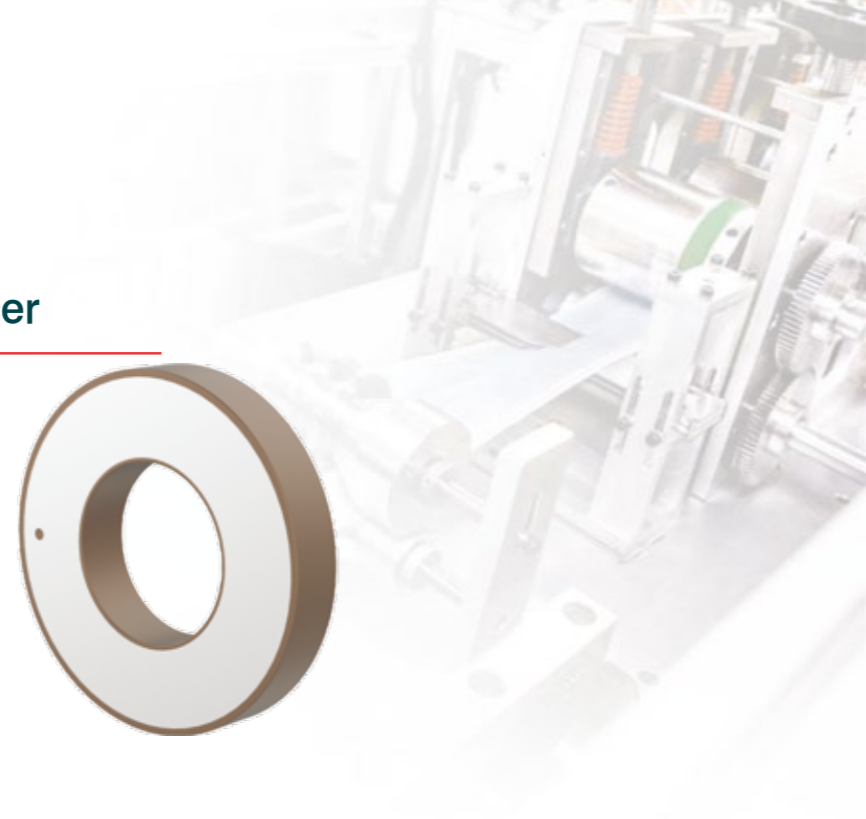
## Ultrasonic Welding Transducer

### Features

- Stable product performance
- Good consistency

### Applications

- Mask machine



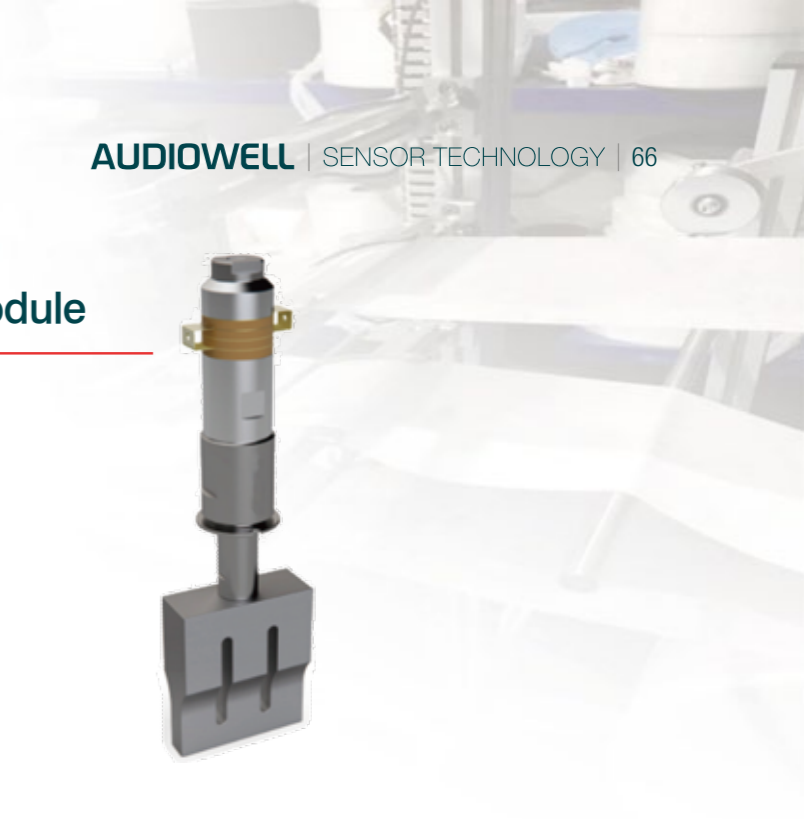
## Ultrasonic Welding Transducer Module


### Features



- Stable product performance
- Work efficiently

### Applications

- Mask machine



Model	HN0774-000	HN0775-000
Appearance		
Operating Frequency (KHz)	25.5±5%	36.1±5%
electrostatic capacity (dF)	1800±20%	2400±20%
Quality factor	>800	>800
Dimensions (mm)	60×30×10	50×17×6.5

Model	HM0001-000	HM0001-001
Appearance		
Resonant impedance (Ω)	≤ 65	≤ 130
Resonance frequency (KHZ)	19.6-20.2	14.9-15.1



## 77GHz Millimeter wave radar

### Features

- It can accurately distinguish multiple targets ahead
- Work around the clock, less affected by weather conditions

### Applications

- Level measurement
- Distance measurement



知乎 @刘继三

## Buzzer

### Features

- Small size, easy to install
- Stable performance

### Applications

- Device alarm










Model	Short range radar	Long range radar
Measurement Range (m)	0.3~70	0.3~250
Accuracy (m)	±0.1025	±0.1025
Speed range (km/h)	-200~+200	-400~+200
Refresh rate (Hz)	20	20
Voltage (v)	4-36	4-36
Power (w)	≤5	≤8
Size (mm)	78 x 67 x 22	138 x 90 x 22

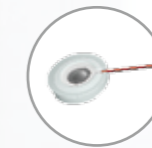
Model	QJ0609-012
Appearance	
Resonant Frequency (Hz)	3000
S.P.L (dB)	≥85(12V/100cm)
Operating Voltage (v)	5.0~18.0
Protection Class	IP66
Dimensions (mm)	D36.5×26mm



## Lineup

Model	Appearance	Production line testing	Plant water management	Face mask machine	Ultrasonic welding machine	Seismometer
Ultrasonic Proximity Sensor		■				
Flow Control Sensor Module			■			
Seismic Hydroacoustic Geophone						■
Ultrasonic Welding Transducer				■	■	
Ultrasonic Welding Transducer Module				■	■	
77GHz Millimeter wave radar			■			
Buzzer				■	■	

## HEALTH CARE



Microporous Atomizing Transducer



Ultrasonic Atomizing Module



Open Type Ultrasonic Sensor



Ultrasonic Harmonic Scalpel Transducer





HEALTH CARE



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**Microporous Atomizing Transducer**


**Features**

- Fine atomized particles
- High through hole rate, up to 97%
- Acid and alkali resistance and cavitation corrosion

**Applications**

- Medical sprays



Model	HQ0074
Appearance	
Resonant frequency (kHz)	110±5
Static capacitance (pF)	3200±20%
Resonant impedance (Ω)	≤180
Aperture (μm)	3±1



## Ultrasonic Atomizing Module

### Features

- No electricity in water
- Equipped with water level detection, water automatically shut down
- High conversion efficiency, low power consumption and low heating

### Applications

- Hydrogen oxygen ventilator



## Open Type Ultrasonic Sensor


### Features

- High cost performance
- Strong anti-interference capability

### Applications

- Oxygen machine



Model	UM0122
Appearance	
Input voltage (V)	24
Resonant Frequency (Mhz)	1.7±0.05
Current consumption (A)	0.77±0.07
Atomization (mL/h)	250-350

Model	TO0039& TO0040	TO0116-004
Resonant frequency (Khz)	25.0±1.0	40.0±1.0
S.P.L (dB)	≥110	≥105
Sensitivity (dB)	≥-65	≥-70
Max. input voltage (Vrms)	20	20
Static capacitance (PF)	2300±20%	1700±20%
Size (mm)	Φ 16.0 x H 12.0	Φ 10.0 x H 7.1



## Ultrasonic Harmonic Scalpel Transducer


### Features

- Large amplitude
- High reliability





### Applications

- Ultracision harmonic scalpel



Model	HN0780
Appearance	
Resonant frequency (kHz)	106
Resonant impedance ( $\Omega$ )	$\leq 30$
Static capacitance (PF)	$660 \pm 20\%$
Dimensions (mm)	16x6x2.5

## Lineup

Model	Appearance	Medical atomizer	Oxyhydrogen ventilator	Oxygen Generator	Cutting hemostatic knife
Microporous Atomizing Transducer		■			
Ultrasonic Atomizing Module		■	■		
Open Type Sensor				■	
Ultrasonic Harmonic Scalpel Transducer					■



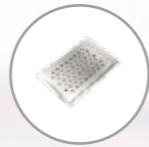
# INTELLIGENT TERMINAL



Piezo Haptic  
Actuator



Haptic Feedback  
Actuator



Multilayer  
Ceramic Speaker



Multilayer Ceramic  
Actuator



Blood Pressure  
Transducer



PZT Bone  
Conduction Vibrator



# INTELLIGENT TERMINAL

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## Piezo Haptic Actuator

### Features

- Advanced seamless design
- Longer life, better experience

### Applications

- Phone/tablet side touch control



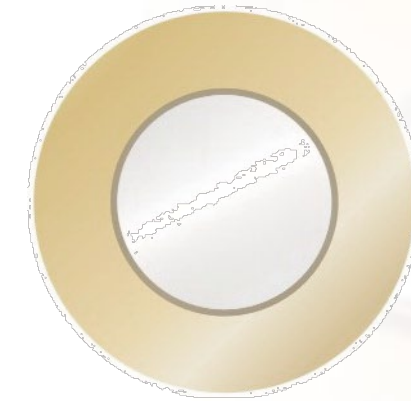
## Haptic Feedback Actuator

### Features



- High reliability
- High sensitivity
- Piezoelectric touch technology, comfortable experience

### Applications

- Virtual key feedback
- Switch tactile feedback



Model	HY0053-001	HY0066	HY0087	HY0099	HY0103
Resonant frequency (kHz)	100K~1M composite oscillator	/	/	/	/
Static capacitance (pF)	Electrode A: 460 Electrode B: 160	385	1250	60	120
Electrode technology	Silver plated	Gold plated	Silver plated	Gold plated	Nickel plating
Dimensions (mm)	5.9×2.5×0.3	5.9×1.5×0.3	10×3×0.3	2.5×0.5×0.3	2.5×1×0.3

Model	PP0873	HY0097
Appearance		
Resonant frequency (KHz)	6.5±1	25±1
Static capacitance (pF)	6000	49000
Electrode technology	A single layer	A single layer
Dimensions (mm)	φ 16×0.26	50×8×0.18



## Piezo Haptic Actuator

### Features

- The acoustic design is simple and can be installed in a narrower and flat space
- Milliwatt power consumption and high conversion efficiency make the product more widely used

### Applications

- Phone/tablet screen sound



## Multilayer Ceramic Actuator


### Features

- High reliability
- Good consistency

### Applications

- Laptop/tablet touch feedback



Model	MT0006
Appearance	
S.P.L (dB)	80
Static capacitance (nF)	1200±30%
Resonant Frequency range (Hz)	300~20000
Max. input voltage (Vp-p)	16
Dimensions (mm)	30×20×2.2

Model	ML0020	ML0021
Resonant frequency (KHz)	43±1	43±1
Static capacitance (pF)	650	450
Electrode structure	Multilayer Ceramic	Multilayer Ceramic
Dimensions (mm)	35×2.4×1	35×3×0.5



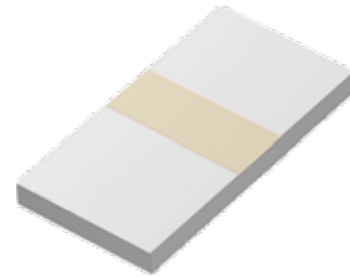
## Blood Pressure Transducer

### Features

- High reliability
- Good consistency

### Applications

- Blood pressure monitoring



## PZT Bone Conduction Vibrator


### Features


- Small size
- High vibration sensitivity
- Wide frequency range

### Applications

- Bone conduction headset



Model	HY0088
Appearance	
Resonant Frequency (MHz)	7.5
Static capacitance (nF)	450±10%
Loss (%)	<3
Dimensions (mm)	1×1.5×0.25

Model	HX0001
Appearance	
Loss (%)	<4
Static capacitance (pF)	95±20%
Operating temperature (°C)	-40~+85
Dimensions (mm)	4.85×0.5×0.5







# 5G COMMUNICATION



5G Dielectric  
Waveguide Filter



# 5G COMMUNICATION





## 5G Dielectric Waveguide Filter

### Features

- Small size, light weight, thin thickness
- SMT welding, convenient installation
- Customizable size, input and output

### Applications

- Base station and repeater
- Microwave communication
- Data transmission



Model	WDT0001-000	WDT0002-000
Frequency (G)	2.6G	3.5G
Bandwidth (MHZ)	2515~2675	3400~3600
Insertion loss	2.2	1.2
Fluctuation	1.2	1
Reflection	16	18
Attenuation (dB)	36dB@2484@2700	51@3200&3800
Size (MM)	53×22×6	31×17×6

## APPLICATIONS



Sonic Expeller



Solar Bird Repeller



Directional Speaker



Anemometer



Loud Expeller



Facial Sprayer





## APPLICATIONS



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## Sonic Expeller


### Features

- High decibel drive away
- Active security
- Safe and efficient

### Applications

- Expel the crow
- Security system



Model	EV-R1
Appearance	
S.P.L (dB)	125
Resonant frequency (KHz)	2~4
Input voltage (V)	12
Current consumption (mA)	<1500
Weight (g)	900
Dimensions (mm)	Φ237×60



## Solar Bird Repeller

### Features

- Distributed solar bird repellent device cooperates with the distributed arrangement in the airport and centralized control strategy
- Can output built-in sound source and random noise
- The product structure is easy to install and easy to operate

### Applications

- Airport bird repellent



## Directional Speaker


### Features

- Excellent directivity
- Intelligent control, remote control by partition and group
- Easy to operate

### Applications

- Billboards, bus stops



Model	CQBR-02
Appearance	
S.P.L (dB)	125
Resonant frequency (KHz)	2~4
Input voltage (V)	12
Power consumption (mA)	<60
Operating temperature (°C)	-25~ +55
Dimensions (m)	1.5×0.4×0.3

Model	FSC1-B1-GS
Appearance	
S.P.L (dB)	85
Power (W)	25
Directionality (°)	<10
Standard throw distance (m)	10
Dimensions (mm)	292 x 163 x 23



## Anemometer

### Features

- Ultrasonic technology, high measurement accuracy
- Stainless steel design, long service life
- Anti-extreme environment, all-weather work
- One-time calibration, no on-site maintenance

### Applications

- Ship, weather station





## Sonic Shield

### Features

- Enhanced the shield with high decibel shocking
- Non-contact measurements
- Highly intensive sound



Model	HM0001
Appearance	
Wind speed range (m/s)	0~70
Wind speed accuracy (Ω)	±0.1m/s@≤10m/s; ±1%@ > 10m/s
Wind direction range (°)	0~360
Wind direction measurement accuracy (A)	±2°
Input voltage (V)	24
Operating temperature (°C)	-40 ~ +85

Model	FSC1-B1-GS
Appearance	
S.P.L (dB)	128±3
Resonant frequency range (KHz)	2~4
Keep ringing (min)	> 70
Dimensions (mm)	900×500×2



## Facial Sprayer

- Atomized cold spray with micron water ion, penetrates the pores and deeply moisturizes the skin
- Unique switch, precise control of spray distance and time.
- Sealed water tank design
- Small design, simple and generous appearance



Model	I03
Appearance	
Input voltage (v)	5
Battery type	3.7V/120mAh
Power (w)	1
Water tank capacity (mL)	7
Weight (g)	30
Dimensions (mm)	27.5×20.7×85

## MILESTONES

