



## SW4201/4601 Impedance Tube Kit

## SW4221/4661 Transmission Loss Tube Kit

### Features:

- Acoustical properties of material measurements based on the transfer-function method according to not only absorption coefficient standard of GB/T 18696.2, GB/J 88, ISO 10534-2 and ASTM E1050-12, but also transmission loss standard of ASTM E2611-17
- Separable sample holder tube is convenient for placement of materials to be test
- Faster and more accurate compared to the standing wave ratio method
- Frequency range can cover high and low bands, depends on various diameter of tube and the different microphone spacing
- Improved sealing and connecting structures between tubes are convenient for measurement and has much better sealing and sound insulation performance



### Applications:

- Quantitative measurement of acoustic properties of materials
- Measure the acoustic coefficients of materials which required for simulation software

### Introduction

**SW** series impedance tube is designed base on transfer-function method, according to GB/T 18696.2, GB/J 88, ISO 10534-2, ASTM E1050-12 and ASTM E2611-17 standards, including impedance tube kit (SW4201/SW4601) and transmission loss tube kit (SW4221/SW4661).

**SW** series impedance tube is based on two-microphone transfer-function method. The normal incidence sound absorption coefficients and specific acoustic impedance ratios of materials in the full measurement frequency range can be obtained only by one test. Compared with the tube designed based on the standing wave ratio method, it significantly improves the test efficiency of material acoustic properties. And the transmission loss tube is based on four-microphone transfer-function method. The transmission loss of materials to be test can be obtained by measuring the sound pressure level at four fixed positions in tube with two different terminals and calculating a complex transfer-function.

The inner diameter of SW series impedance tube is 100 mm (SW4201/SW4221, the frequency range is 50 Hz~1.6 kHz) and 29 mm (SW4601/SW4661, the frequency range is 500 Hz~6.4 kHz). The two types of impedance tubes can be used together to expand the frequency range.

**SW** series impedance tube is made of hard aluminum alloy, with compact design, light weight and easy to assemble, which is convenient for filed measurement of acoustic properties of materials.

### Impedance Tube/Transmission Loss Tube

Type	SW4201	SW4601	SW4221	SW4661
Standard	GB/T 18696.2, GB/J 88、ISO 10534-2, ASTM E1050-12		ASTM E2611-17	
Frequency Range	50 Hz~1.6 kHz	500 Hz~6.4 kHz	50 Hz~1.6 kHz	500 Hz~6.4 kHz
Diameter	100 mm	29 mm	100 mm	29 mm
Length of Tube <sup>1</sup>	893 mm	603 mm	1261 mm	781 mm
Zero Absorption	50 Hz~4 kHz: <5 %, 5 kHz~6.4 kHz: <10 % (calculated in 1/3-octave band)			
Operating Environment	Temperature: -10 °C~50 °C, Humidity: 5 %RH~95 %RH (non-condensing)			

Note 1: The length is the minimum combination state.

**Loudspeaker**

Rated Impedance	4 $\Omega$
Diameter	3.5-inch
Sensitivity	89.8 dB (2.83 V@1 m)
Rated Power	10 W (continuous)
Peak Power	30 W (short duration: duty cycle 1/3, on time 50 s)
Audio Interface	Banana socket

**Measurement Microphone**

Type	MPA416 Prepolarization Microphone
Diameter	1/4"
Sensitivity ( $\pm 2$ dB)	50 mV/Pa (-26 dB re 1 V/Pa)
Output Impedance	< 110 $\Omega$
Dynamic Range	29 dBA ~ 127 dB
Self-generated Noise	29 dBA
Power Supply	ICCP

**Kit Including**

**SW4201**  
50 Hz~1.6 kHz



**T100L** Type of tube  
▲ Split part

**SW4221**  
50 Hz~1.6 kHz



**SW4601**  
500 Hz~6.4 kHz



**SW4661**  
500 Hz~6.4 kHz



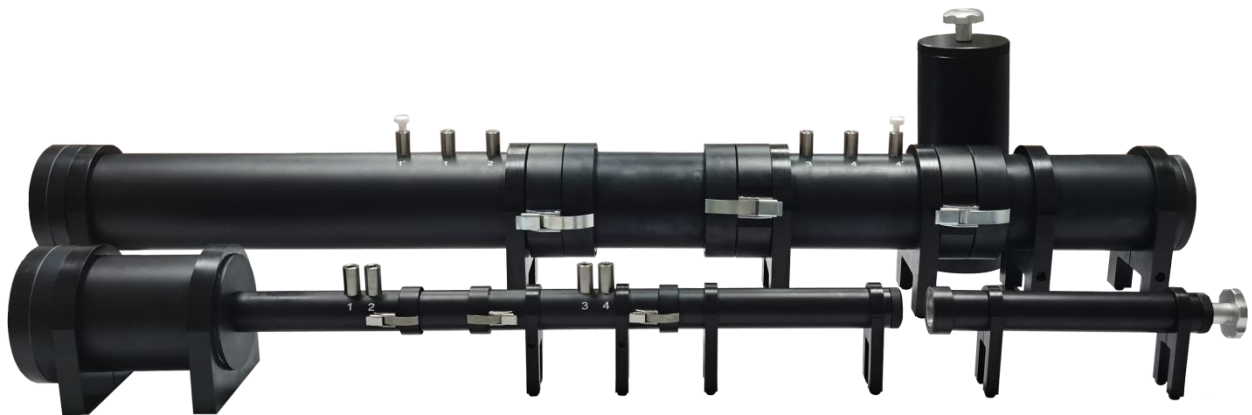


## Ordering Information

Type	Frequency Range	Type of Tube	Accessory	Note
Impedance Tube Kit	SW4201	50 Hz~1.6 kHz Test tube with loudspeaker T100L Absorption sample holder T100AS	MPA416 microphone <sup>1</sup> x 2 Calibration sample x 1 (depends on diameter of tubes) Dummy microphone x 1	Sound absorption coefficient
	SW4601	500 Hz~6.4 kHz Test tube with loudspeaker T29L Absorption sample holder T29AS	PA50 power amplifier <sup>1</sup> MC3242A data acquisition <sup>1</sup>	
Transmission Loss Tube Kit	SW4221	50 Hz~1.6 kHz Test tube with loudspeaker T100L Absorption sample holder T100AS Transmission loss sample holder T100TS Transmission loss test tube T100TL Absorption terminal tube T100TE Sample positioning tool T100PT	MPA416 microphone <sup>1</sup> x 4 Calibration sample x 1 (depends on diameter of tubes)	Sound absorption coefficient, and Transmission loss
	SW4661	500 Hz~6.4 kHz Test tube with loudspeaker T29L Absorption sample holder T29AS Transmission loss sample holder T29TS Transmission loss test tube T29TL Absorption terminal tube T29TE Sample positioning tool T29PT	Dummy microphone x 2 PA50 power amplifier <sup>1</sup> MC3242A data acquisition <sup>1</sup>	

Note 1: Optional, the type may vary according to the applications.

## Photo of All Tubes



**BSWA Technology Co., Ltd.** Room 1003, North Ring Center, No.18 Yumin Road, Xicheng District, Beijing 100029, China • Tel: 86-10-5128 5118 • Fax: 86-10-8225 1626 • E-mail: info@bswa.com.cn • URL: www.bswa-tech.com

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