



New Calibrated Instruments for Registering Noise and Vibration

Placid Instruments BV

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About us

PLACID Instruments is a high quality and affordable brand specialized in noise and vibration sensors and instruments. Our measurement microphones and preamplifiers are very stable over the years under variable meteorological conditions.



Our instruments (sound level meter, calibrator, impedance tube, DAQ) are easy to use and come with software to post-process the registered noise and vibration data to create reports.



Our engineers are happy to consult you which measurement microphones or instruments are most suitable for your application. Most of the users of PLACID Instruments are acoustical consultants, acoustical laboratory, R&D departments, safety personnel, architects, construction companies, mining etc.



Our manufacturing plant uses the latest technology to manufacture our high precision measurement microphones. Rigorous QC makes sure that our products are most reliable and stable to be used for many years.



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PLACID Impedance Tubes Sound Absorption | Sound Transmission Loss

ISO 10534-2, ASTM E1050-08, ASTM E2611-09

The Impedance tube(also known as Kundt Tube) measures, calculates and lets the user analyze Parameters like the Sound normal incidence absorption(Absorption Coefficient, Reflection Coefficient, Impedance, Admittance) and Sound Transmission/ sound insulation (Transmission Loss, Transmission Coefficient) of the material under test.



The results can be used to compare the basic absorption performance of the material and for acoustics simulations.

In practice, the absorbers can be quite large and their structure and configuration may be complex and part of acoustic designs. Furthermore, they will be exposed to real sound fields where the incident sound may come from many directions.



Acoustic Material Testing

- o Sound Absorption Coefficient (α)
- o Sound transmission Loss (TL)
- o Standard lists :
ISO10543-2, ASTM E1050-08,
ASTM E2611-09, GB/T-18696
- o Frequency Range:
50-10000Hz

Features

- o Transfer function method 2 microphones
- o Wide range Testing
- o Plug and Play DAQ System



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Specification

	Type PI8810	Type PI8803	Type PI88016
Inner Diameter	100 mm	30 mm	16mm
Frequency Range	50 Hz to 1600 Hz	800 Hz to 6300 Hz	2.5 kHz to 10 kHz
Measurement	Sound Absorption, Sound transmission Loss		
Data acquisition	4 Channels ICCP input A/D converter 16/24 bit		
Microphones	¼" Class1 20 Hz to 20 kHz with BNC to SMB connector		
Power Amplifier	50 W. Class D		
Sound Source	4" loudspeaker 20W 4ohm		
Sound calibrator	94/114 dB at 1000 Hz		
Standards	ISO10543-2, ASTM E1050-08, ASTM E3611-09, GB/T-18696		
Ambient conditions	0 – 40 C (32 – 140 F), 10 – 90% RH, 650 – 1080 hpa		
Storage temperature & humidity	-10 – 50 C (14 – 122 F), 0 – 70% RH		

Application

- o testing of material characteristics and verifying material compliance before implementing the materials in the assemblies
- o design of acoustic comfort in aircraft, helicopters, ships, yachts and vehicle interiors by selecting the optimal acoustic treatments and noise barriers
- o research and development of noise control products by benchmarking competitive products
- o research jobs for students and universities
- o validating and calibrating theoretical computational methods such as acoustic modelling



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For Absorption

Sound absorption measurement obtains Absorption Coefficient, Reflection Coefficient, Impedance and Admittance of testing materials

The results can be used to compare the basic absorption performance of the material and for acoustics simulations. In practice, the absorbers can be quite large and their structure and configuration may be complex and part of acoustic designs. Furthermore, they will be exposed to real sound fields where the incident sound may come from many directions.

The Impedance tube kit can determine the sound absorption coefficient as well as the transmission loss.

PI8810, 100 mm impedance tube, frequency range 50 Hz – 1600 Hz

PI8803, 30 mm impedance tube, frequency range 800 – 6300 Hz

PI88016, 16mm impedance tube, frequency range 2500 – 10000 Hz

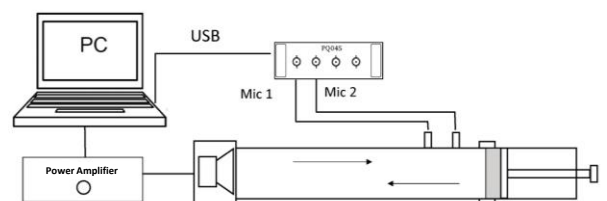
Microphones used: 1/4" Class 1, 20 Hz to 20 kHz (BNC to SMB connector)



Impedance tube can measure sound absorption coefficient as well as transmission loss, ISO10543-2, ASTM E1050-08.

Tube Diameter (mm)	Tube Length (mm)	Frequency Range (Hz)	Sample holder length (mm)	Tube Type
100	970	50-1600Hz	320	PI8810
30	585	800-6300Hz	300	PI8803
16	320	2.5kHz-10kHz	210	PI8816

Sound absorption measurement setup





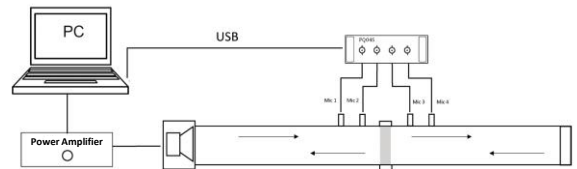
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For Transmission Loss

Tube Diameter (mm)	Tube Length (mm)	Frequency Range (Hz)	Extension on tube length (mm)	Tube Type
100	970	50-1600Hz	850	PI8810
30	585	800-6300Hz	520	PI8803
16	320	2.5kHz-10kHz	560	PI88016

Sound transmission loss measurement setup



Sound absorption / transmission loss description



Measurement	Sound Absorption	Sound Transmission Loss
Tubes	43 Hz to 1600 Hz 100 mm Diameter Tube 100 mm Sample holder 800 to 6300 Hz 30mm Diameter Tube 30mm Sample holder 10 khz 16 mm Diameter Tube 16 mm Sample holder	43 Hz to 1600 Hz 100 mm Diameter Tube 100 mm Extension holder 800 to 6300 Hz 30mm Diameter Tube 30mm Extension holder 10 khz 16 mm Diameter Tube 16 mm Extension tube
Data Acquisition	4 Channels ICCP input A/D converter 16/24 bit	4 Channels ICCP input A/D converter 16/24 bit
Microphones	X2 ¼" Class 20 Hz to 20 kHz with BNC to SMB connector	X4 ¼" Class 20 Hz to 20 kHz with BNC to SMB connector
Microphones cable	X2 4m BNC to SMB	X4 4m BNC to SMB
Power amplifier	50W ultralow distortion	50W ultralow distortion
Power amplifier cable	2m Banana cable	2m Banana cable
Sound Source	4" loudspeaker 20W 4ohm	4" loudspeaker 20W 4ohm
Sound Calibrator	94/114 dB at 1000 Hz	94/114 dB at 1000 Hz
Measurement Software	Sound Absorption testing	Sound Transmission Loss testing



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PLACID DAQ Data acquisition hardware

PLACID Multi-Channel Signal Conditioner Q series portable dynamic signal conditioner is characterized by **high the sampling rate, high measurement accuracy, compact size and portability.** S data acquisition chip, multi-channel synchronization and sampling frequency up to 64 kHz/channel. Customer can achieve the equipment control and data acquisition, signal analysis and other functions through supporting software SoundExpress

Specification



Input Channels	4/8/16
Programable Gain	x1, x10, x100
ICCP Power Supply (mA)	4
A/D convertor 16/24 bit	16/24
Max. Sampling Frequency (Hz)	60k
Internal Noise (mVrms @±10V) <	<0.03
Input Range (Vrms) ±	±10
Dynamic Range (dB)	110
Input Connector	BNC
Connector to the Computer	Network Port
Multi-cascade	Multi-cascade, synchronus
Power Requirement Internal	Internal rechargeable battery or 12 V with power adaptor
Size (mm) (length x width x height)	210 x 130 x 50
Weight (kg)	1.5



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PLACID Microphones



All PLACID microphones are made of high-quality materials that will ensure long stability and durability. The microphone diaphragm, body, and protection grid are made of high-grade stainless steel, which makes the microphone resistant to physical damage. PLACID offers 2 years warranty against defective materials and workmanship



PLACID MICROPHONES OVERVIEW

Type	Diameter (Inch)	Sound Field	Frequency (Hz ~ kHz)	Sensitivity (mV/Pa)	Dynamic Range (dBA)	Polarization Voltage (V)	Height (mm)	IEC 61094 designation
PMV21	1/2	Free-field	20 Hz~ 20 kHz	40	17 - 150	200	17.6	WS2F
PMV27	1/2	Pressure field	20 Hz ~ 20 kHz	12	27 - 155	200	12.3	WS2P
PMP20	1/2	Free-field	20 Hz ~ 20 kHz	12	27 - 155	0	12.3	WS2F
PMP21	1/2	Free-field	20 Hz ~ 20 kHz	50	17 - 146	0	17.6	WS2F
PMP22	1/2	Free-field	20 Hz ~ 16 kHz	32	22 - 130	0	17.6	WS2F type II
PMP27	1/2	Pressure field	20 Hz ~ 20 kHz	12	27 - 155	0	12.3	WS2P
PMP40	1/4	Free-field	20 Hz ~ 20 kHz	50	29 - 126	0	5.0	WS3F type I
PMP41-1	1/4	Free-field	20 Hz ~ 40 kHz	4	34 - 164	0	5.0	WS3F type I
PMP41	1/4	Free-field	20 Hz ~ 16 kHz	4	34 - 164	0	7.0	WS3F type I
PMP42	1/4	Free-field	20 Hz ~ 16 kHz	8	30 - 126	0	7.0	WS3F type II



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PLACID Amplifiers for sound registration



PLACID PREAMPLIFIERS OVERVIEW

Type	PNP21	PNP22	PNP41	PMP40 (mic + preamp)
Diameter	1/2 inch	1/2 inch	1/4 inch	7mm
Frequency Response (Ref: 250 Hz, ±0.2 dB)	5 Hz ~ 100 kHz	5 Hz ~ 100 kHz	5 Hz ~ 100 kHz	5 Hz ~ 100 kHz
Attenuation (10 Hz ~ 100 kHz)	< 0.5 dB	< 0.5 dB	< 0.5 dB	< 0.5 dB
Input Impedance	> 5 GΩ	> 5 GΩ	> 1.5 GΩ	> 1.5 GΩ
Output Impedance	< 110 W	< 110 W	< 110 W	< 110 W
Electrical Noise (self noise)	A-weighting < 2.0 μV20 Hz ~ 20 kHz < 6.0 μV	A-weighting < 2.0 μV20 Hz ~ 20 kHz < 6.0 μV	A-weighting < 2.5 μV20 Hz ~ 20 kHz < 6.0 μV	A-weighting < 2.5 μV20 Hz ~ 20 kHz < 6.0 μV
Maximum Output Voltage	8.0 Vrms	8.0 Vrms	8.0 Vrms	6.0 Vrms
Power Requirement	ICP (2 ~ 20 mA)	ICP (2 ~ 20 mA)	ICP (2 ~ 20 mA)	ICP (2 ~ 20 mA)
Operating Temperature	-40°C ~ 100°C	-40°C ~ 100°C	-40°C ~ 100°C	-30°C ~ 80°C
Operating Humidity	0 ~ 98% RH	0 ~ 98% RH	0 ~ 98% RH	0 ~ 98% RH
Output Connector	BNC	SMB	SMB	SMB
Length (mm)	68	35	58	64
Weight (g)	25.5	14.5	6.5	7.5



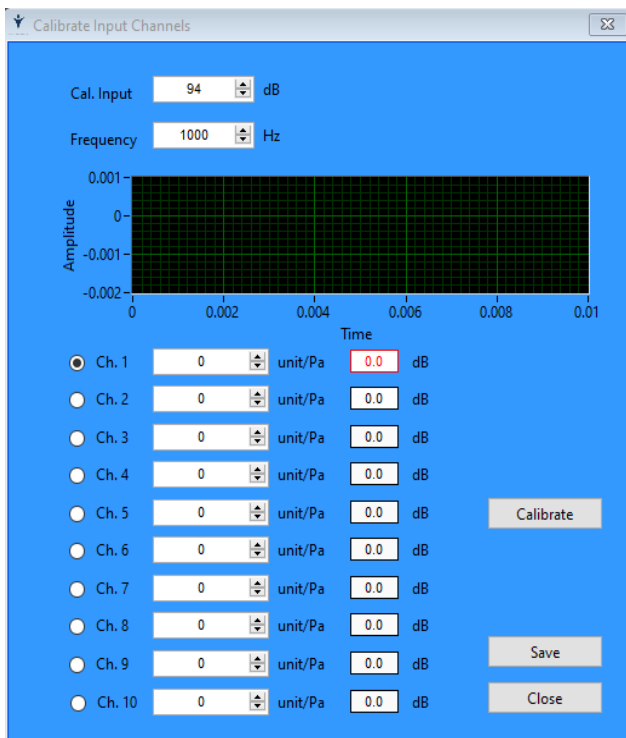
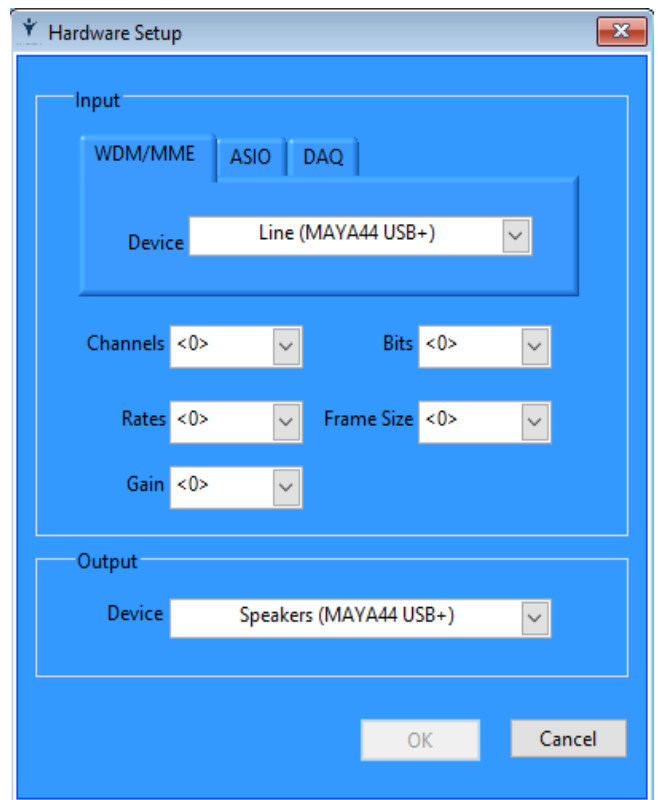
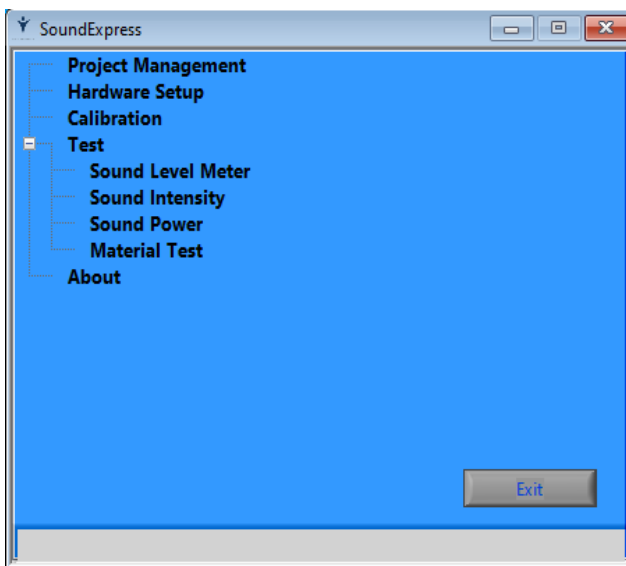
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SoundExpress Software Menu





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Absorption Coefficient

Tube Setting

Test Type: Absorption Coefficient

Tube Parameter: Absorption Coefficient, Transmission Loss

Tube Type: Small Tube

Distance between Sample and the nearest Mic(m): 0.015

Distance between two Mics(m): 0.0225

Tube Diameter(m): 0.03

Frequency Range(Hz): 800 To 6300

Sample Thickness(m): 0

OK Cancel

Tube Setting

Test Type: Absorption Coefficient

Tube Parameter: Environment Parameter

Tube Type: Small Tube

- Large Tube
- Large Wide Tube
- Small Tube
- Ultra Small Tube
- Custom

Frequency Range(Hz): 800 To 6300

Sample Thickness(m): 0

OK Cancel

Tube Setting

Test Type: Absorption Coefficient

Tube Parameter: Environment Parameter

Atmospheric Pressure(Pa): 101325

Temperature(Degree): 20

Velocity of Sound(m/s): 343.2

Density of Air(kg/m³): 1.186

Characteristic Impedance of Air(Pa's/m): 407.035

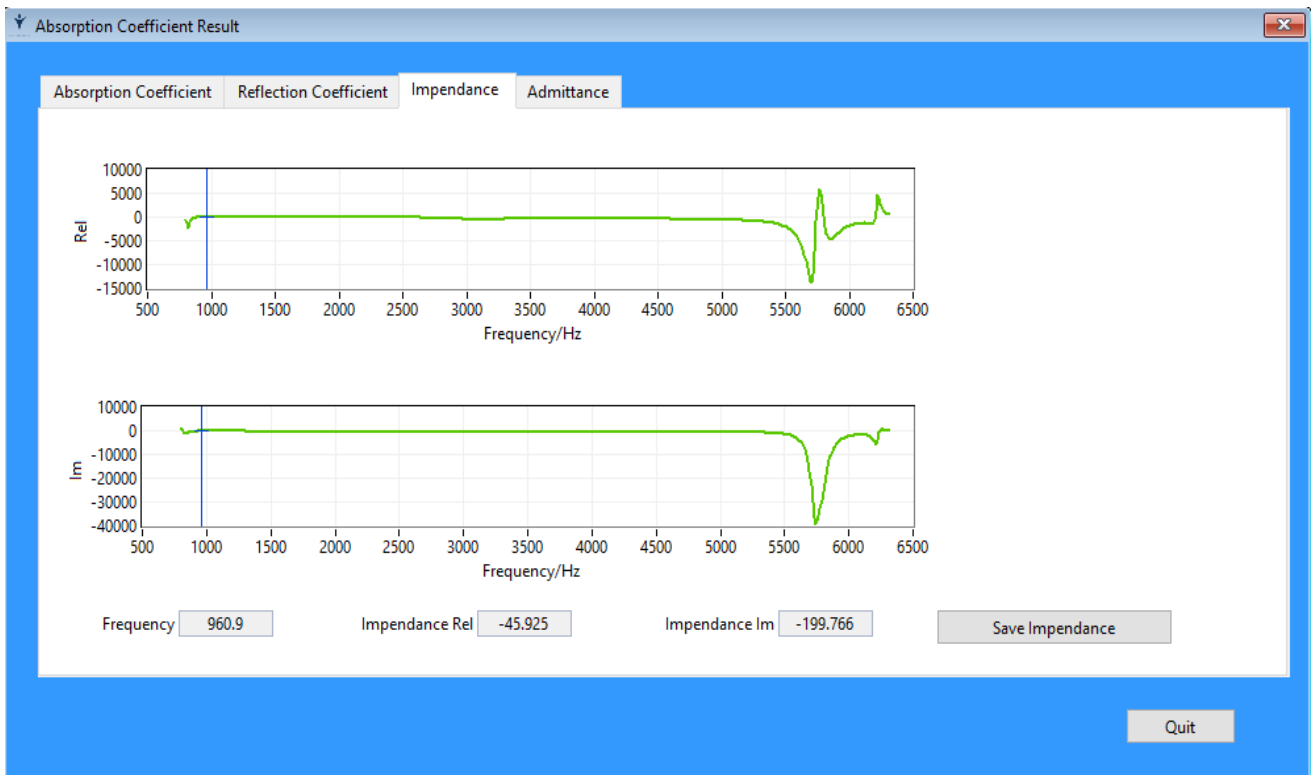
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Measurement of materials impedance values, transfer function, impedance coefficient and transmission loss of material



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