

# $\mu$ Z-30 datasheet

Team ASCEE<sup>1</sup>

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Revision history:

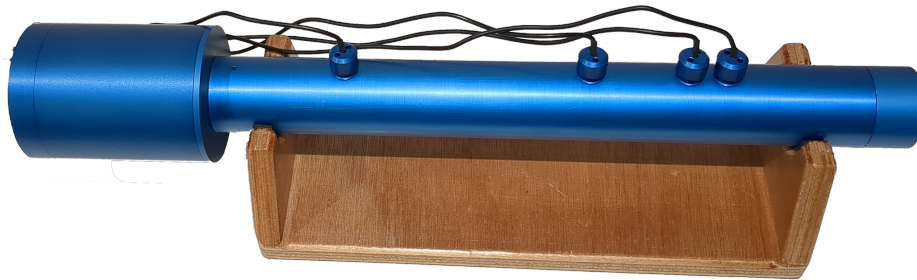
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## 1 Overview

The ASCEE  $\mu$ Z-30 is a 30 mm diameter impedance tube, designed for small samples. A special calibration method allows for quick calibration, without having to switch the microphone positions.

$\mu$ Z-30 accurately measures impedance, reflection and absorption. It is specifically designed for small samples. It requires an easy calibration without switching microphone positions.

Due to the used calibration method, we claim to achieve a **higher accuracy** than the one obtained upon using EN-ISO 10534-2. The result is also that we do not claim to be conforming this standard. Although:

- The microphone hole sizes are conforming EN-ISO 10534-2.
- The mechanical design is conforming EN-ISO 10534-2.

Each tube section is has a threaded connection with other sections. O-rings make sure the system is free of any leakage. A small vent ensures no static pressure build-up occurs when parts are connected.

## 2 Technical data

### 2.1 Acoustic measurement outputs

The specified technical data below are possible measurement outputs. These quantities are related via known acoustic relations.

- Acoustic input impedance (rayls / acoustic Ohms)
- Acoustic series impedance (rayls / acoustic Ohms)
- Complex reflection coefficient (-)
- Normal incidence sound absorption coefficient (-)

### 2.2 Acoustic measurement range

Parameter	Min.	Max.	Unit
Frequency range	30	6,000	Hz
Acoustic input impedance range	0	$12 \cdot 10^3$	mks. rayls
Acoustic input impedance range rel. air, $z/z_0$	0	30	
Series impedance range	0	17	MPa·s / m <sup>3</sup>
Sound pressure level (closed tube)		~ 130	dB SPL

## 2.3 Mechanical

Tube inner diameter	30	mm
Material	Aluminum	
Finish	Anodized, blue	
Tube thread	M45×1.5; length 10	mm
Weight	17	kg
Dimensions, base system (L x W x H)	82 × 15 × 20	cm
Dimensions, case	117.5 × 46 × 15.5	cm

## 2.4 Electrical

### 2.4.1 Microphone and preamplifier

Output connector	XLR, requires 48 V phantom power	
Noise floor	21	dB(A)
Microphone sensitivity	-40	dBV @ 94 dB SPL, 1 kHz
Max. sound pressure level (10% THD)	135	dB SPL
Max. output voltage	1	V rms

### 2.4.2 Speaker amplifier

Input connector	1/4" TRS jack, balanced
Input sensitivity	+4 dBU / 1.228 V rms

## 2.5 Interface

Computer interface	USB A connector, USB 2.0 / USB Audio Class 2.0
Software	ACME with $\mu$ Z module
Operating system	Ubuntu / Debian Linux / Linux Mint / Windows 10 or later
Driver Windows	Requires an ASIO driver for high channel synchronous audio I/O
Driver Linux	Not required