

# Datasheet calibration

## Standard calibration text file

probe number 17  
 customer name Microflown Technologies  
 calibration method short standing wave tube  
 date 9-feb-07  
 probe type PU probe  
 Sensitivity reference mic Spref = 10 mV/Pa  
 Sample frequency 48000 Hz  
 Number of FFT points 8192 points

fc1 = 30-60Hz. C1 = 30-100 Hz

fc2 = 800-1210Hz. C2 ~ fc2

fc3 = 6000-130000Hz. C3 ~ fc3

$S_u = S_u @ 250\text{Hz} [LFS] / ((\sqrt{1+(f/c1)^2}) (\sqrt{1+(f/c2)^2}) (\sqrt{1+(f/c3)^2}))$

$S_p = S_p @ 1\text{kHz} [LFS] / (\sqrt{1+(f/c1)^2})$

phase(pu) = phase(p) - phase(u)  
 (reduced)

phase (pu) =  $(\text{tg}^{-1}(C1/f)) - (\text{tg}^{-1}(C1/f)) + (\text{tg}^{-1}(f/C2)) + (\text{tg}^{-1}(f/C3))$

	P	U					
Freq	Abs(p/pref)*Spref	Phase(p)	Abs(u/pref)*Spref	Phase(u)	Abs(u/p)	Phase(pu)	
0.00	9.88	0.00	10128979192.30	90.00	1030149662.01	90.00	
5.86	9.15	-0.74	1592.78	92.56	176.40	88.30	
11.72	2.00	115.66	72.62	-45.09	85.79	-125.73	
17.58	3.43	102.10	60.01	66.41	20.35	-98.49	
23.44	4.55	89.82	64.75	68.50	8.74	-65.91	
29.30	5.58	79.16	63.67	43.34	8.08	-11.25	
35.16	6.32	70.01	70.41	50.50	10.86	-26.71	
41.02	7.03	62.74	78.25	48.06	11.12	-22.97	
46.88	7.59	56.97	84.54	41.25	10.44	-17.55	
52.73	7.97	51.52	86.50	35.45	10.78	-17.19	
58.59	8.24	46.75	92.69	32.07	11.16	-15.81	
64.45	8.51	43.57	94.68	26.25	11.57	-15.57	
70.31	8.81	40.39	97.90	22.77	11.56	-15.63	
76.17	9.04	37.40	103.25	21.18	11.32	-16.34	
82.03	9.20	34.85	106.19	18.78	11.44	-17.44	
87.89	9.30	32.61	108.05	15.97	11.54	-18.58	
93.75	9.43	30.81	107.85	13.69	11.71	-18.82	
99.61	9.54	29.35	109.70	10.64	11.77	-19.26	
105.47	9.56	28.11	112.44	7.37	11.73	-21.08	

## **Description**

The standard calibration text file consists 7 columns with data, and some general information about the measurement. The first column is the frequency from 0 to 24000 Hz. The second is the sensitivity of the pressure element of the PU-probe, the third the phase of the pressure element. The fourth is the sensitivity of the particle velocity element, the fifth is the phase of the particle velocity. The sixth and the seventh column are based on the ratio between the pressure and velocity element of the PU-probe. Six is the ratio, seven is the phase of the ratio. The first row in a textfile is called 'row 0'.

## **Requirements**

Requirements for the standard file are as following:

- Each column is separated by a ',' (comma).
- First row: first a comma than probe number.
- Second row: first a comma than customer name.
- Third row: first a comma than calibration method.
- Fourth row: first a comma date of calibration.
- Fifth row: first a comma than probe type.
- Sixth row: first a comma than sensitivity of reference microphone.
- Seventh row: first a comma than sample frequency.
- Eight row: first a comma than number of FFT points.
- Row nine till row 24 empty or some other data.
- Row 25 is the first row with calibration data.

## **Specifications**

Required Software: Matlab 7.2 and higher  
Calibration data process software.

System: Standard PC