Piezoelectric Respiration (PZT) Sensor Data Sheet

SPECIFICATIONS

> Type: Piezoelectric film

FEATURES

- > Piezoelectric film technology
- > Differential measurement
- > Adjustable elastic chest strap
- > High sensitivity
- > Pre-conditioned analog output

APPLICATIONS

- > Thoracic or abdominal respiration analysis
- > Respiratory cycles measurement
- > Sleep studies
- > Biomedical research
- > Biofeedback
- > Psychophysiology

GENERAL DESCRIPTION

Our piezoelectric respiration sensor is an entry-level affordable option for respiratory analysis in a wide range of applications. It has a localized sensing element that measures displacement variations induced by inhaling or exhaling. The elastic strap is provided with the sensor to secure it in place, and can be adjusted in length, enabling the sensor to be applied in different anatomies (e.g. male and/or female) and body locations (e.g. thorax and/or abdomen). Typical applications include monitoring of respiratory rate, respiratory cycle regularity, relative amplitude of the cycle, and others. When multiple sensors are used simultaneously it enables diaphragmatic versus thoracic breathing assessment (e.g. for biofeedback).



Fig. 1. The sensor is provided with a convenient elastic chest strap to secure it in place.



Fig. 2. Typical raw respiration data (acq. with biosignals).



Fig. 3. Example of respiration sensor used on the chest.

TRANSFER FUNCTION

bic grouplus wearable body sensing platform

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REV A

[-50%, 50%]

$$PZT(\%) = \left(\frac{ADC}{2^n} - \frac{1}{2}\right).100\%$$

PZT(%) – Displacement value in percentage (%) of full scale ADC – Value sampled from the channel n – Number of bits of the channel¹

ORDERING GUIDE

Reference	Package Description
PZT1	Piezoelectric respiration (PZT) sensor in a standard configuration.
PZT1-A-S	Piezoelectric respiration (PZT) sensor built with custom cable length A and custom sleeve color S; for standard physical characteristics in A or S use 0.
	Examples: > PZT1-200-0: PZT sensor with a 200cm cable A and random sleeve color > PZT1-0-Yellow: PZT sensor with a standard cable size A and a yellow cable sleeve > PZT1-50-Red: Fully custom PZT sensor with a 50cm cable A and a red cable sleeve

¹ The number of bits for each channel depends on the resolution of the Analog-to-Digital Converter (ADC); in biosignalsplux the default is 16-bit resolution (n = 16), although 12-bit (n = 12) and 8-bit (n = 8) may also be found.

