

Temperature (NTC) Sensor Data Sheet

NTC 12072017

SPECIFICATIONS

- > **Range:** 0-50°C
- > **Type:** NTC thermistor
- > **Diameter:** 2.04mm
- > **Response Time (Air):** 15 seconds
- > **Response Time (Water):** 2 seconds

FEATURES

- > Medical-grade PVC insulation
- > Fast response
- > Pre-conditioned analog output
- > High signal-to-noise ratio
- > Ready-to-use form factor

APPLICATIONS

- > Life sciences studies
- > Biomedical research
- > Human-Computer Interaction
- > Robotics & Cybernetics
- > Physiology studies
- > Psychophysiology
- > Biomechanics
- > Ergonomics

GENERAL DESCRIPTION

Our high performance NTC sensors have been specifically developed for biomedical applications, and are meant to be used on a range of temperatures suitable for body sensing. These sensors produce a robust, stable, and accurate output with low tolerance values. The geometry and rapid response are also of added value for even the most demanding applications.



Fig. 1. Integrated miniaturized sensor + cable assembly providing unrivalled usability.

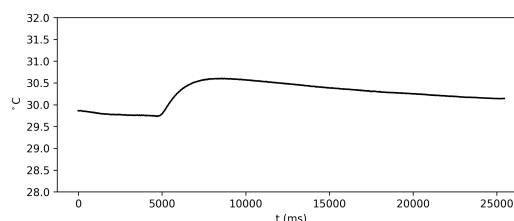


Fig. 2. Example temperature (NTC) sensor data.



REV A

PLUX – Wireless Biosignals, S.A.
Av. 5 de Outubro, n. 70 – 8.
1050-059 Lisbon, Portugal
bitalino@plux.info
<http://bitalino.com/>

© 2017 PLUX 

This information is provided "as is," and we make no express or implied warranties whatsoever with respect to functionality, operability, use, fitness for a particular purpose, or infringement of rights. We expressly disclaim any liability whatsoever for any direct, indirect, consequential, incidental or special damages, including, without limitation, lost revenues, lost profits, losses resulting from business interruption or loss of data, regardless of the form of action or legal theory under which the liability may be asserted, even if advised of the possibility of such damages.



BEWARE: DIRECT OR INDIRECT COUPLING TO THE MAINS MAY RESULT IN SHOCKING HAZARD



Temperature (NTC) Sensor Data Sheet

TRANSFER FUNCTION

$$NTC(V) = \frac{ADC.VCC}{2^n}$$

$$NTC(\Omega) = \frac{1 \times 10^4 \cdot NTC(V)}{VCC - NTC(V)}$$

$$TMP(^{\circ}K) = \frac{1}{a_0 + a_1 \cdot \log(NTC(\Omega)) + a_2 \cdot [\log(NTC(\Omega))]^3}$$

$$TMP(^{\circ}C) = TMP(^{\circ}K) - 273,15$$

$VCC = 3.3V$ (operating voltage)

$$a_0 = 1,12764514 \times 10^{-3}$$

$$a_1 = 2,34282709 \times 10^{-4}$$

$$a_2 = 8,77303013 \times 10^{-8}$$

$NTV(V)$ – NTC output in Volt (V)

$NTC(\Omega)$ – NTC resistance in Ohm (Ω)

$TMP(^{\circ}K)$ – Temperature value in Kelvin ($^{\circ}K$)

$TMP(^{\circ}C)$ – Temperature value in Celsius ($^{\circ}C$)

ADC – Value sampled from the channel

n – Number of bits of the channel¹

¹ The number of bits for each channel depends on the resolution of the Analog-to-Digital Converter (ADC); in BITalino the first four channels are sampled using 10-bit resolution ($n = 10$), while the last two may be sampled using 6-bit ($n = 6$).