

Temperature (NTC) Sensor Data Sheet

NTC 12072017

SPECIFICATIONS

- > **Range:** 0-50 (± 0.15) °C
- > **Type:** NTC thermistor
- > **Diameter:** 2.04mm
- > **Response Time (Air):** 15 seconds
- > **Response Time (Water):** 2 seconds



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

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

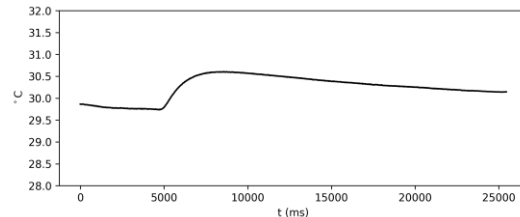


Fig. 2. Example temperature (NTC) sensor data.

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. The geometry and rapid response are also of added value for even the most demanding applications. It can be used to measure corporal or ambient temperatures. The sensor produces an accurate analog output signal with short response times to temperature alterations. The medical-grade PVC insulation of the Temperature sensor allows a safe use of this sensor even when in direct skin contact. It is recommended to use it underarm.

bitalino

PLUX – Wireless Biosignals, S.A.
Av. 5 de Outubro, n. 70 – 2.
1050-059 Lisbon, Portugal
bitalino@plux.info
<http://bitalino.com/>

REV B

© 2020 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

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

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

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

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

$VCC = 3.3V$ (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

ORDERING GUIDE

Part #	Description
SENS-NTC-UCE6	High definition medical-grade temperature sensor specifically designed for peripheral and non-peripheral body temperature measurement. This sensor is coming with UC-E6 connectors to be plugged to a BITalino @evolution Plugged or Core.

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 ($n = 6$).