

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 unrivaled usability.

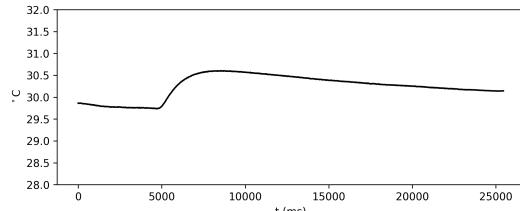


Fig. 2. Example TMP data (acquired with biosignalsplus).

biosignalsplus
wearable body sensing platform

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TRANSFER FUNCTION

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

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

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

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

$VCC = 3V$ (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

Reference	Package Description
SENSPRO-TMP	Temperature sensor for peripheral body temperature measurement with standard physical characteristics and random sleeve color.

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