NTCLE100E3 Thermistor

AIAA OC Rocketry - June 27, 2015

This thermistor is used in the CanSat project from NAROM (Norwegian Centre for Space Related Education). Much of the information is from Jens Frederik Dalsgaard Nielsen from Aalborg University and we thank him for making this possible for SPARC.

As a caution, most of the documentation that you will find on line from NAROM still uses the older Arduino shields. For SPARC we will be using the Version 4, which added the ability to use a GY80 10 Degree of Freedom (DOF) Inertial Measurement Unit (IMU) that includes sensors that measure teperature. If you do not use the GY80 you will need to use this NTCLE100E3 thermistor.

This .ZIP file contains information to help get the MMA7361 3-Axis Accelerometer up and running. It includes the following files and folders:

- DOCUMENTATION FOLDER
    - Cansat_arduino_shield_ver4 (Schematic).pdf – is the schematic for the NAROM Version 4 Arduino Shield
    - NTCLE100 is the data sheet for the thermistor
- LIBRARIES FOLDER
    - Ntc10k library required for the thermistor sketches. This library performs performs the conversion between the voltage read and the temperature, in degrees Celsius. Note that the calibration is very sensitive to the resistor in series with the thermistor, so use a low tolerance (1% or better) resistor and enter the measured value into ntc10k.cpp as the pad value.
- LINKS FOLDER
    - "Aalborg University Shield V4 Web Page" will take you to a web page on the CanSats and the Shield. This appears to be an early description of the V4 shield – the modifications described will already be done on the final V4 shield
    - "Arduino Software Tools Web Page" will take you to the main Arduino web site where you can download the IDE (Integrated Development Environment) for writing and compiling Arduino code for your CanSat project. And there is a lot of great information elsewhere on that site
    - "NAROM 2013 CanSat Book (Uses Older Shield)" will let you download the NAROM CanSat Book with a lot of good information about the project. Again, this references an older Shield
    - "NTCLE100E3 at Digikey" links to one source of the thermistor at Digikey
    - "NTCLE100E3 at Mouser" links to one source of the thermistor at Mouse
- SKETCHES FOLDER
  These sketches were provided by Jens at NAROM/Aalborg university and modified by AIAA OC Section Rocketry. There is information in the header of the sketch about the connection details.
    - Ntc10k contains the ntc10k.ino sketch. Wire up your thermistor on a breadboard (only takes a couple of wires and a resistor or install in the V4 shield and run the program. Use the Serial Monitor to see the temperature.

- Calib15g6g contains the calib15g6g.ino sketch. Once you know the accelerometer is working, you can use this sketch to help calibrate the sensor.