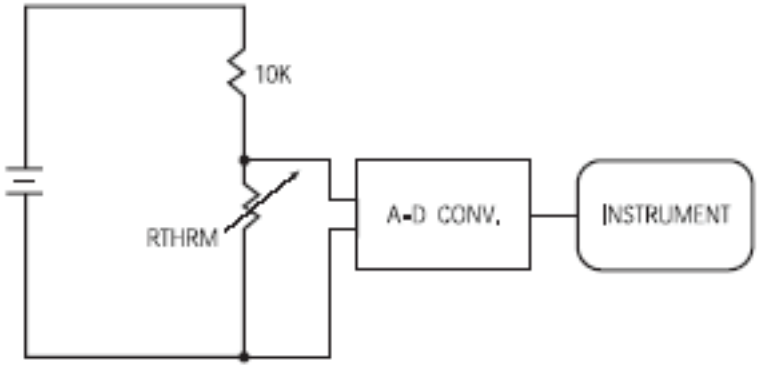
# Application Using Thermistor Characterization Equation

The equation for thermistor characterization is known as the Steinhart-Hart equation. This equation requires the computation of the coefficients a, b, c and d. These can also be obtained from the thermistor manufacturer. The resulting temperature is given in degrees K. The following BASIC program demonstrates this method, using the same circuit as above, with A-D high ref = bridge voltage (5V) and A-D low ref at 0V.

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a = ?                                   'these constants need to be
b = ?                                   'entered
c = ?
d = ?
resolution = 256                        'for 8 bit A-D
vref = 5                                'bridge voltage
rfix = 10000                            'fixed bridge resistor

OPEN "A-D" FOR INPUT AS #1              'open A-D
INPUT #1, ADCOUNT                       'and get count
VBRIDGE = ADCOUNT*(vref/resolution)     'convert to voltage across
                                         thermistor
RTHERM = VBRIDGE/((vref-VBRIDGE)/rfix)  'find thermistor resistance

                                        'convert to temperature using given
                                        'coefficients and equation. This is
                                        'the standard Steinhart-Hart equation,
                                        'with the 273.15 added to yield
                                        'deg C.

TEMP = (1/(a + b*(lnRTHERM) + c*(lnRTHERM)^2
+ d*(lnRTHERM)^3)) - 273.15

PRINT TEMP                              'and the final output in deg C
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