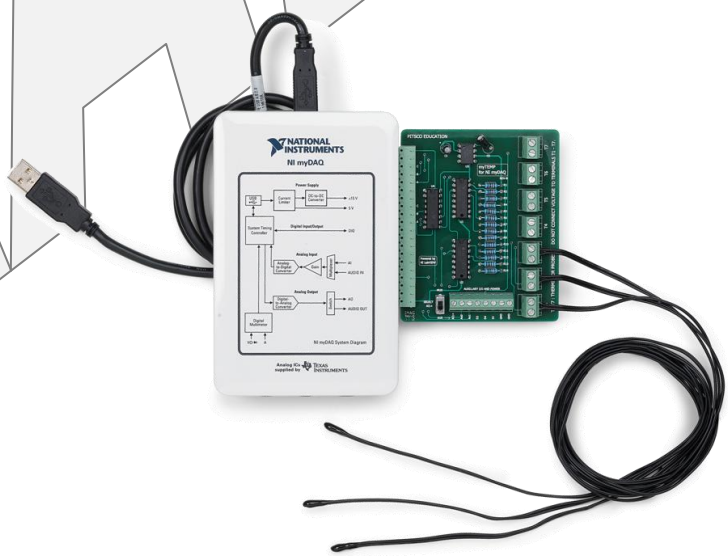
NI miniSystems Pioneer Release

Inspired by customer applications and developed in collaboration with leading educational suppliers, NI miniSystems are small-scale replications of real-world systems that connect with NI educational hardware and software to create engineering and science systems.

NI miniSystems in Pioneer Release allow users in higher education (university/college) to purchase units so they can "ramp-up" on integrating NI miniSystems into courses as soon as they are available. National Instruments collects active feedback from users of NI miniSystems in Pioneer Release to acquire sufficient feedback for suppliers and partners before the next release. NI miniSystems in Pioneer Release are stable but not feature complete and will most likely require the use of custom programming to fully meet customer application needs. For this reason, it is recommended that customers self-qualify to participate in the Pioneer Release by obtaining basic LabVIEW training (LabVIEW Core 1 and 2). Participants have access to standard training discounts that can be viewed at ni.com/training.

During the Pioneer Release of a NI miniSystem, support is provided via emails to minisystems@ni.com or by posting to a private NI Discussion Forum. To get access to the Forum for yourself or other customers, please contact National Instruments using the above email address.

myTemp for NI myDAQ



The myTemp by Pitsco Education is a multi-sensor temperature measurement and control system for NI myDAQ. The system uses one analog input channel to read three thermistor inputs and the other analog input is switch selectable between four additional thermistor inputs or an AUX input terminal. Additionally, the system provides access to two analog outputs, two digital I/O lines and the 5V supply from myDAQ. The myTemp ships with three NTC thermistors. This very versatile system is used for teaching applications such as temperature process control, basic sensor measurements, and data acquisition and analysis. Students can directly explore important concepts of materials science and green engineering including heat transfer, conduction, convection and radiation.

The courseware examples will be created to illustrate many concepts. One example will involve heat transfer across the surface of different materials. The students can measure the time it takes for different materials to

react to both hot and cold temperature inputs. Another courseware example illustrates a relative humidity measurement using two thermistors. Students can make correlations between humidity and external light sources in a closed environment.

Analog Input Modes

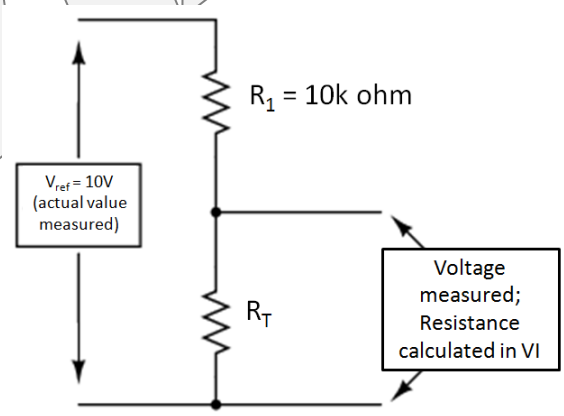
1) MUX switch position: 1 reference voltage and 7 thermistor inputs are multiplexed into AI0 and AI1
2) AUX switch position: 1 reference voltage and 3 thermistor inputs are multiplexed into AI0 and an auxiliary analog input is read from the small terminal block at the inputs labeled AI1+ and AI1-

Multiplexer Truth Table

	DIO Line Setting (X = Don't Care)					
AI0 Reading	**DO0**	**DO1**	**DO2**	**DO5**	**DO6**	**DO7**
Reference Voltage	0	0	0	X	X	X
T1	1	0	0	X	X	X
T2	0	1	0	X	X	X
T3	1	1	0	X	X	X
AI1 Reading	**DO0**	**DO1**	**DO2**	**DO5**	**DO6**	**DO7**
T4	X	X	X	0	0	0
T5	X	X	X	1	0	0
T6	X	X	X	0	1	0
T7	X	X	X	1	1	0

Thermistor Connections

Thermistor resistance is measured using the voltage divider configuration shown below. The Voltage Reference (V_{ref}) value is read with each reading and that value is used in the resistance calculation.



Additional I/0 (available on small terminal block)

Analog Outputs: AO0 and AO1
DIO lines: DIO3 and DIO4

5V supply from myDAQ
GND