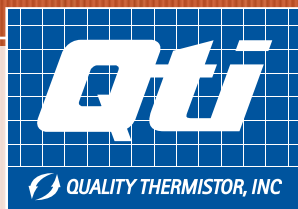


# PRECISION USB THERMOMETER

Accurate. Easy. Direct.



Looking for an easy to use and highly accurate temperature measurement system? DIRECTEMP™ is a customizable precision USB thermometer that's accurate to  $\pm 0.1$  °C from freezing to boiling.



TEMPERATURE SENSOR EXPERTS ■ [WWW.THERMISTOR.COM](http://WWW.THERMISTOR.COM)



## DESCRIPTION

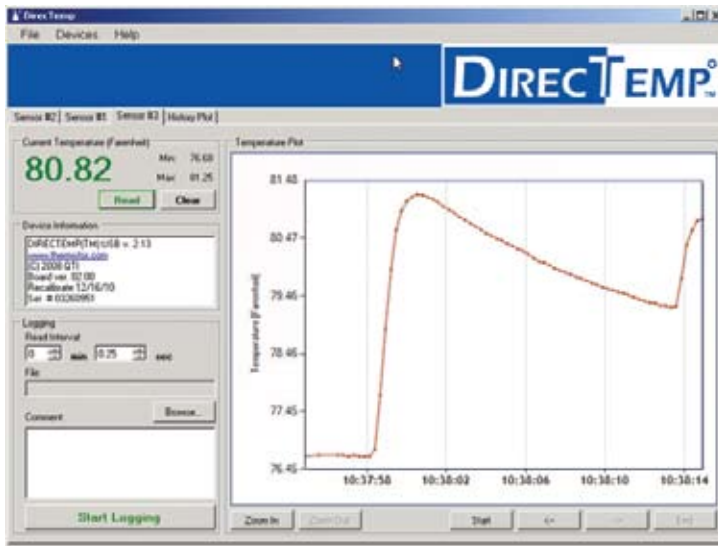
A high precision thermistor is combined with a 14 bit analog to digital converter and a simple USB communication interface to capture **real-time** temperature data. The **DIRECTEMP<sup>o</sup>**™ device can communicate either as a Human Interface Device which auto installs to interface with the **DIRECTEMP<sup>o</sup>**™ data logging software, or as a virtual serial port with which custom or third party software may be used. **DIRECTEMP<sup>o</sup>**™ probes are calibrated in QTI's metrology laboratory and can be recalibrated and returned to service for extended life. The absolute accuracy and repeatable precision of the **DIRECTEMP<sup>o</sup>**™ USB temperature acquisition system will become invaluable to your most critical application.



## SPECIFICATIONS

- Up to  $\pm 0.1$  °C absolute accuracy
- Up to 0.01 °C resolution\*
- Choose probe style, cable length, and critical temperature point
- PC powered, no batteries
- Temperature range: -55 °C to 150 °C with proper probe selection
- RoHS compliant

TOLERANCE	$\pm 0.1$ °C: 0 °C to 100 °C or $\pm 0.5$ °C (0-70°) $\pm 1.5$ °C: -55 °C to 150 °C
RESOLUTION	0.01 °C
RoHS COMPLIANT	Yes
CURRENT DRAW	< 100mA



DirecTemp<sup>o</sup>™ Software (HID configuration only)

## AVAILABLE INTERFACE OPTIONS

### HID Configuration

(Plug & Play, DirecTemp<sup>o</sup>™ Software Included)

- Windows data logging software included (left)
- Automatically recognized and installed by Microsoft Windows
- Stream data to a plot and record to file for future analysis
- Compatible with Win 2000, XP, Vista & 7

### SERIAL CONFIGURATION

(Virtual Com Port, For OEM & Proprietary Software Applications)

- Virtual serial device
- Designed for integration with custom third party software applications
- Free demo software & LabVIEW VI included
- Communication protocol information available upon request
- Compatible with Linux, Windows, and MacOS systems

\*User specified single point temperatures and tolerances available

**Warning: Do not use in human life support applications.**

This device is not designed nor intended to operate in situations where human injury will result in the event of a failure.



## COMMUNICATION OPTIONS

### ■ HID

#### Benefits

- No driver required in modern operating systems (I.e. Linux kernel 2.6+, MacOS X+, Windows 2000+)
- User software for Windows 2000, XP, Vista, 7 included
- Linux is driver available to simplify scripting
- Communication format available for custom application development

#### Drawbacks

- USB HID raw device communication requires in-depth USB knowledge
- No MacOS X example programs

### ■ SERIAL

#### Benefits

- Simple character commands using well known serial port communication
- Functions in modem/terminal software
- Easily automated into custom software solutions
- Installs just like HID on all but Windows

#### Drawbacks

- Serial port name assignment may vary from machine to machine and between operating systems
- Windows requires a driver that requires some technical knowledge to complete

## CUSTOM SOFTWARE OPTIONS

### ■ HID

#### Basic Communication

- Send device command "2" as first element of 16 byte array on endpoint 1 (IN interrupt endpoint)
- Receive device response on endpoint 2 (OUT interrupt endpoint); discard echoed command in first element and all nulls. Data will be in degrees C terminated with CRLF

#### Linux driver install: insmod directemp.ko

- Dmesg|tail to get usbdevicename something like 1-1:1.0 (type 1-1:1.0)
- Script using "cat /sys/bus/usb/devices/usbdevicename/temp1\_input"
- Receive temperature in degrees C

#### Programming examples:

- C#, VB
- Python

### ■ SERIAL

#### Basic communication

- Type or send a "2" character
- Receive temperature in degrees C terminated with CRLF

#### Examples

- Java, VB, Labview, Hyperterminal/Realterm, Matlab
- Python, Minicom, Bash script
- Screen terminal

## EMBEDDED SOLUTIONS

The DirecTemp product is also available for board level solutions.

- CAN-Bus
- UART
- SPI
- I<sup>2</sup>C

## DTU6005-005

This small polyimide sensor is ideal for measuring temperature in a confined space like a graphics card in a computer case or between network servers. Due to the sensors small size, it has an extremely fast response time. Comes with 48" of wire.

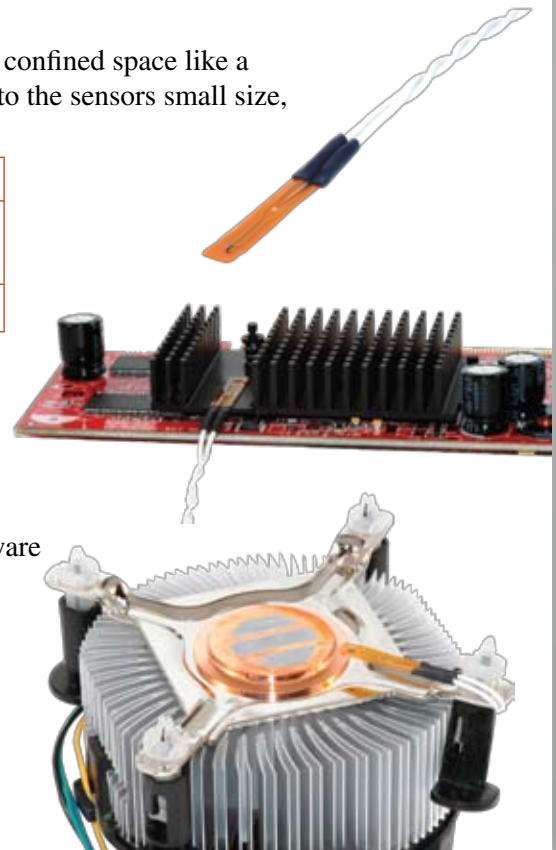
Temperature Range	-55 °C to 100 °C
Accuracy	B3 = +/- 0.5 °C (0-70 °C)
Certificate	NIST Traceable certificate available
Resolution	0.01C Accuracy is up to +/-0.1C

## FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

## IDEAL FOR

- Monitoring temperature inside a computer
- Monitoring temperature of a server rack or room
- Monitoring temperature of a heat sink or other confined area



### DTU6001-001

Designed as a direct replacement for a traditional dial thermometer, this robust stainless steel probe is ideal for measuring the temperature of liquid filled tanks or vats. It features a 1/2" NPT housing made from food grade 316 stainless steel with a 2" long probe. 10' of easy to clean PVC cable connect to the USB housing.



#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Tracking food safety
- Liquid filled tanks and vats
- Replacement for a traditional dial thermometer



### DTU6028-001

Perfect for inspecting and logging data in everything from food to chemicals in beakers, it's also a great replacement for dial thermometers. The probe is made up of an ergonomic non-slip handle and a 0.125" x 5.0" piercing probe made from food grade 316 stainless steel. We've added 6' of coiled PVC cable to help keep the cable out of your way.

#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Tracking food safety
- Spot inspection of food or chemicals
- replacement for a traditional dial thermometer

### DTU6005-003

Looking for a waterproof miniature temperature sensor? The DTU6005-003 is a 0.037 diameter polyimide sensor housed in an easily replaceable glass tube. It features 36" of #26 AWG wire connected to the USB device.



#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Laboratory temperature measurement and tracking
- Liquid filled test tubes and vials
- Confined areas with high moisture



### DTU6005-006

Designed as a heavy use food thermometer. This probe is built out of one piece of 316 stainless steel. Easy to clean and very durable, the 2" long tip is stepped down to 0.063" in diameter. Over all length of the handle and probe tip is 4.5". It features 6' of coiled PVC cable connected to the USB device.

#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Harsh environment temperature measurement
- Frozen food inspection
- Point of use inspection and audits

### DTU6001-001

Ideal for use as a general purpose probe. The probe is made up of an 0.187" x 2.00" food grade stainless steel. 10' of durable PVC cable allow you to monitor and log temperature remotely. Other probe sizes available upon request.



#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Monitoring indoor or outdoor temperature
- Monitoring temperature in a confined space
- Monitoring temperatures in cold storage units (walk in freezers, etc)



### DTU6007-001

A 1/4" Hex with 8-32 UNC threads is an ideal probe for monitoring temperature in a confined space. The probe is made up of an aluminum housing with 10' of durable #26 gauge PVC wire that allows you to monitor and log temperature remotely. Other probe sizes available upon request.

#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Monitoring temperature inside a computer
- Monitoring temperature in a confined space

### DTU6009-001

A #10 size Ring lug (0.19" hole) is a great general use indoor or outdoor USB thermometer. This easily repositionable probe is made up of a nickel plated ring lug with 10' of durable PVC cable that allows you to monitor and log temperature remotely. Other ring lug sizes available upon request.



#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Monitoring temperature on a server rack
- Logging temperature data in multiple locations.
- Monitoring temperature in a confined space



### DTU6024B-XXX

Pipe mount temperature sensor. Simply zip tie the sensor to a pipe or rounded surface. This probe style is ideal for high humidity environments. Available with a 3/8" radius. Other pipe dimensions available upon request. Supplied with 10' of durable PVC wire that allows you to monitor and log temperature remotely.

#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Monitoring temperature on a pipes and rounded surfaces
- Logging temperature data in multiple locations.
- Monitoring temperature in a high humidity environments

### DTU6020-001

This probe is designed with a Polyimide tube housing that has a very high electrical dielectric strength. The sensor is ideal for computer cabinets and server rooms. The DTU6020-001 comes with a .136" diameter polyimide tube with 10' of #22 AWG PVC cable. Other tube diameters are available upon request.



#### FEATURES

- Upper & lower control limits with email alerts
- Multiple sensors supported
- Fahrenheit, Celsius & Kelvin
- Use as a plug and play Windows device or through your own software

#### IDEAL FOR

- Monitoring temperature in computers and server rooms.
- Logging temperature data in multiple locations.



### DTU6005-002

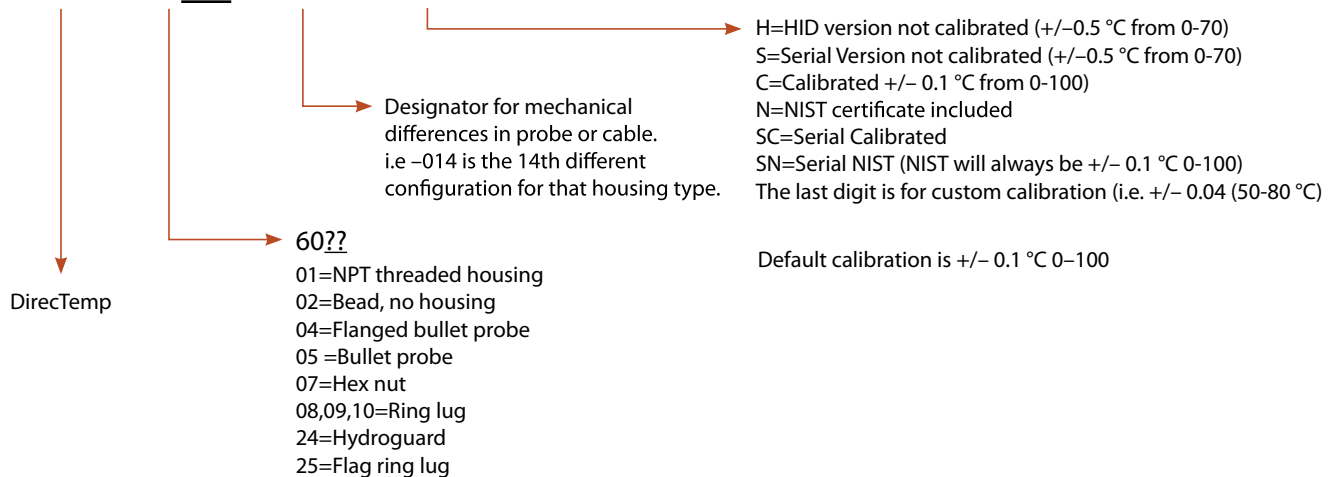
This probe is designed as a calibration probe with a 9” rugged stainless steel probe. Often used for liquid immersion, the probe is immersible only to the end of the 9” sheath. The DTU6005-002 comes with a 0.125” tube stepped to 0.30” and a spring strain relief. Standard cable length is 10’ of PVC cable. Other tube diameters and cable lengths are available upon request

### IDEAL FOR

- Monitoring temperature in computers and server rooms.
- Logging temperature data in multiple locations.

## WHAT DOES THE PART NUMBER MEAN?

### DTU 6005 -003 -XXX



**HID =** Is the standard plug and play Windows version. Comes with QTI’s software for data logging, etc. If you are running multiple sensors, they just appear as new tabs in the software.

**Serial=** This version is targeted towards OEM users who will write their own interface using LabVIEW, Linux, etc. Comes with the serial driver as well as some examples.

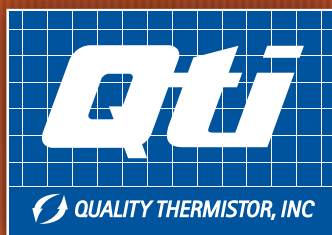
**NIST=** This version comes with a certificate showing the serial numbers of the calibration equipment, calibration interval, etc.

**DIRECTEMP<sup>®</sup>**

**Qti**

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