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Battery Temperature Sensor Manual

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Introduction

This Battery Temperature Sensor is the first in a new range of sensor products designed for battery health monitoring, suitable for monitoring solar panel, UPS and generator batteries.

The BTTS is embedded into a terminal lug and is designed to connect directly to the Negative Battery Terminal and provide readings to aid in monitoring the battery health, and internal temperature. As the battery terminal provides the closest thermal connection to the batteries internal plates it will give you the closest accuracy to the actual battery temperature. The sensor chip is insulated to help protect it from interference from ambient temperature fluctuations.

It is based on our AKCP Temperature sensor design, with a fixed 12ft length of cable. As with all our intelligent sensors its presence will be automatically detected by the base unit. Each sensor has its own SNMP OID so that data can be collected over the network and graphed.

We do not recommend you trying to connect any of our AKCP sensors including the Battery Temperature sensors though patch panels or using the RJ-45 couplers to extend them. You may find that this works, however it will be very inconsistent and this is due to the signal strength from the sensor to the base unit. The resistance of the extra connectors in a patch panel, or couplers is often enough to prevent the sensor from working.

Important Note: New style of temperature, and temperature humidity sensors were introduced in the later part of 2017. These sensors WILL NOT function correctly if you have not upgraded the firmware on your AKCP base unit to the latest on our website.

These new style of sensors are NOT compatible with the old obsolete AT-Mega128 AKCP sensorProbe or the old obsolete PXA type securityProbe base units. You can check these details regarding your unit type on our support site.

All of the previous style temperature, temperature and humidity sensors are fully supported on the AKCP sensorProbe, SP+ and SEC+ base units.

Sensor Information

Product Code: BTTS – The sensor cable should not be extended as it is designed to connect to the AKCP base unit's sensor port and monitor the temperature at the location where the base unit has been installed.
You can purchase the sensor with a fixed 12 feet of cable length.
Please note the sensor is susceptible to EMI (Electromagnetic interference). It is recommended to not run the cable near any type of power supply or other equipment that will emit EMI. This sensor should also not ever be connected through patch panels.

Sensor Calibration

All Battery Temperature sensors are calibrated at the factory, so there is no need to calibrate them. We do have the calibration certificates, so please contact AKCP support if these are required.

The sensors are very accurate, however if you find the temperature reading varies slightly you can use the "Offset" feature which is explained in detail later in this manual.

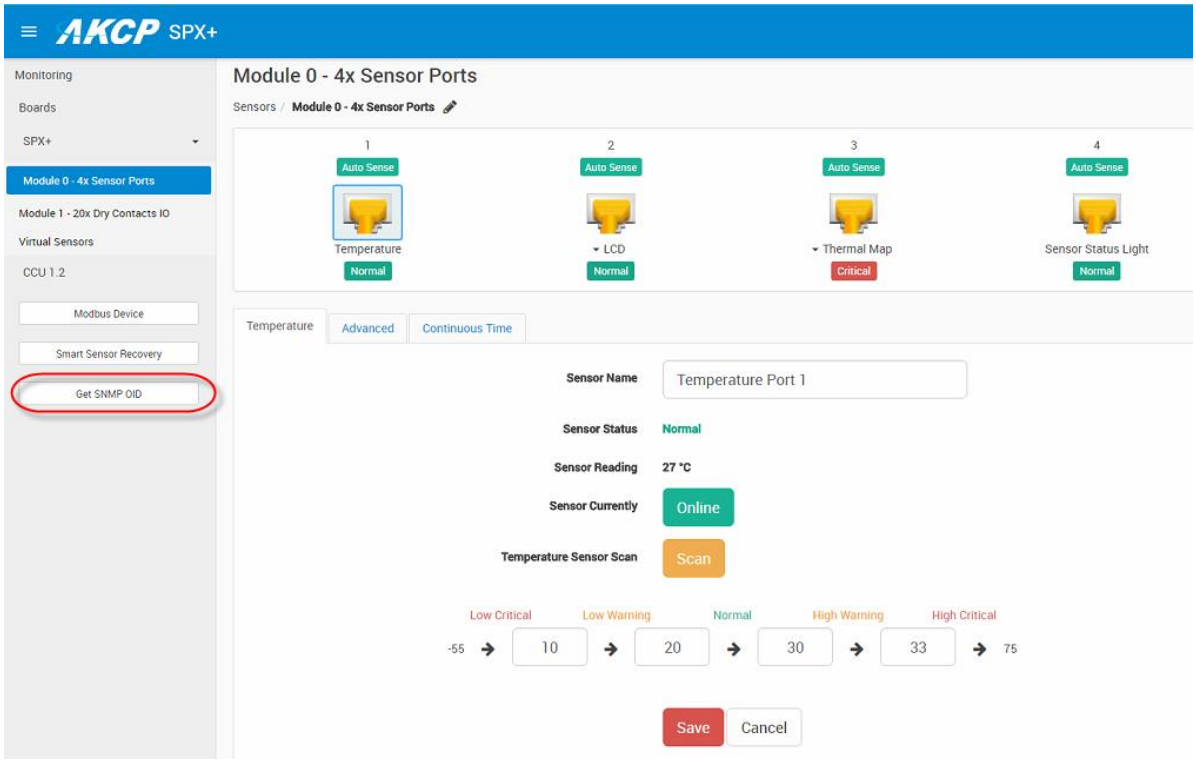
Battery Safety Essentials & Disclaimer

AKCP is not responsible for any problems or injury caused by the misuse, abuse, incorrect installation of any battery, or failure to comply with the above warnings and guidelines.

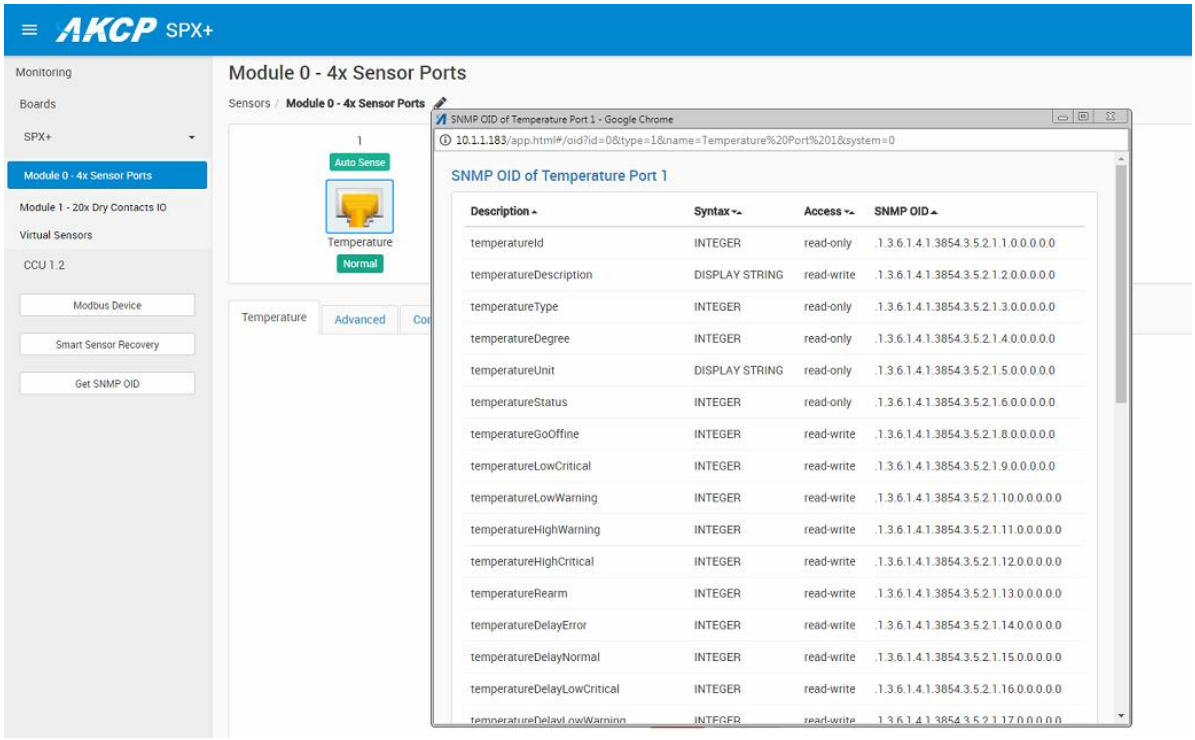
Battery Temperature Sensor OID

A commonly used SNMP OID for the temperature sensor is the number of degrees. This information can be used for graphing the sensor.

The SNMP OID for the temperature sensor degrees on RJ45#1:
.1.3.6.1.4.1.3854.1.2.2.1.16.1.3.0



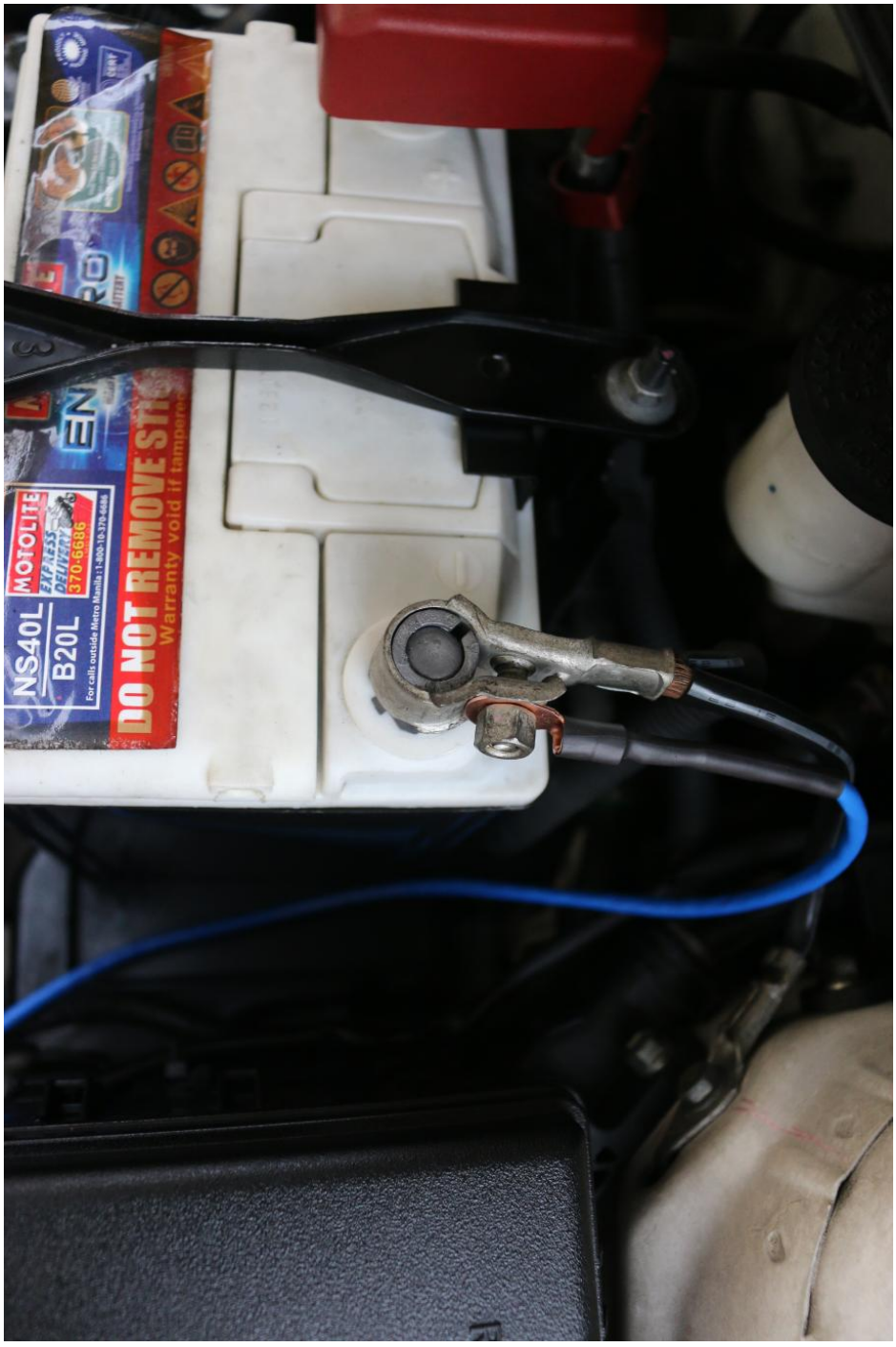
By using the GET SNMP OID button shown in the above screen shot allows you to view all of the Temperature sensors OID's as shown in the screen shot below. This feature is only available on the SP+, SEC+ and securityProbe base units.

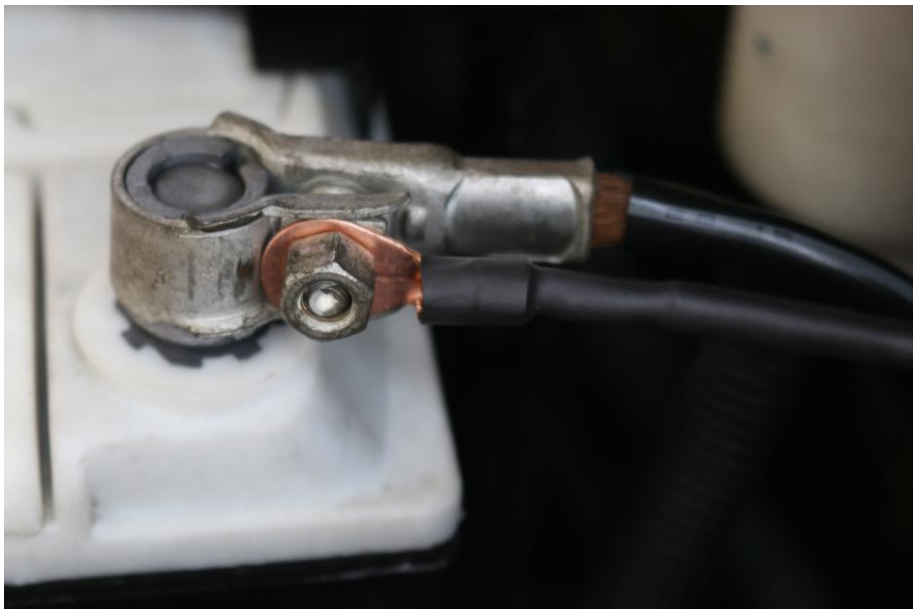


The screen shot above shows the results of the GET SNMP OID feature for the Temperature Sensor connected to port #1 of the SPX+ unit.

Installation and Connection of the sensor

Below you'll see an example about how this sensor could be installed on a car's battery.





The sensor is connected to the battery's negative terminal, where the temperature can be most accurately measured.

In the image above you can see how the sensor is installed on the negative terminal of the car battery by first removing the nut from the battery terminal inserting the sensor connector onto the bolt of the battery terminal connector, then installing the nut back onto the terminal bolt.

The nut needs to be tightened down to insure the connection is tight and cannot become loose during any vibration which could cause the sensor to not function properly.

The RJ-45 end of the Battery Temp Sensor then will connect to the sensor port on the AKCP base unit

Configuring the Battery Temperature Sensor

a) Plug the sensor into one of the RJ45 ports on the rear panel of the unit.

b) Now point your browser to the IP address of the unit (default, 192.168.0.100). Next you need to login as the administrator using your administrator password (default is “public”). You will then be taken to the summary page.

c) From the summary page you need to select the sensors tab. The layout of the next page will vary depending on your unit so please refer to your unit’s manual.

d) You should now be able to setup the thresholds for your sensor. The low critical, low warnings, normal, high warnings, high critical values can be set from this page.

Now we will cover the settings that are specific to your sensor.

Current Reading: The number of Degrees is displayed in this read-only field. This is an integer SNMP OID field which has a precision of 1 degree. The value can be polled via SNMP, and the data can be used to graph the temperature variations. The value displayed can be in Fahrenheit or Celsius. If communication to the temperature sensor is lost, the sensor value -512 will be returned by a *snmpget*.

Hint: The actual precision for the temperature sensor is 0.9°F (0.5°C). Nevertheless, the Current Reading field only displays the temperature with an increment/decrement of 1 degree. To retrieve the actual reading from the temperature sensor, another SNMP OID must be used; it is:

.1.3.6.1.4.1.3854.1.2.2.1.16.1.14.0 *for the sensor on RJ45#1.*

However, since this is an integer SNMP OID, the temperature must be multiplied by 10 before polled via SNMP. Therefore, the returned value has to be divided by 10 to become the actual temperature.

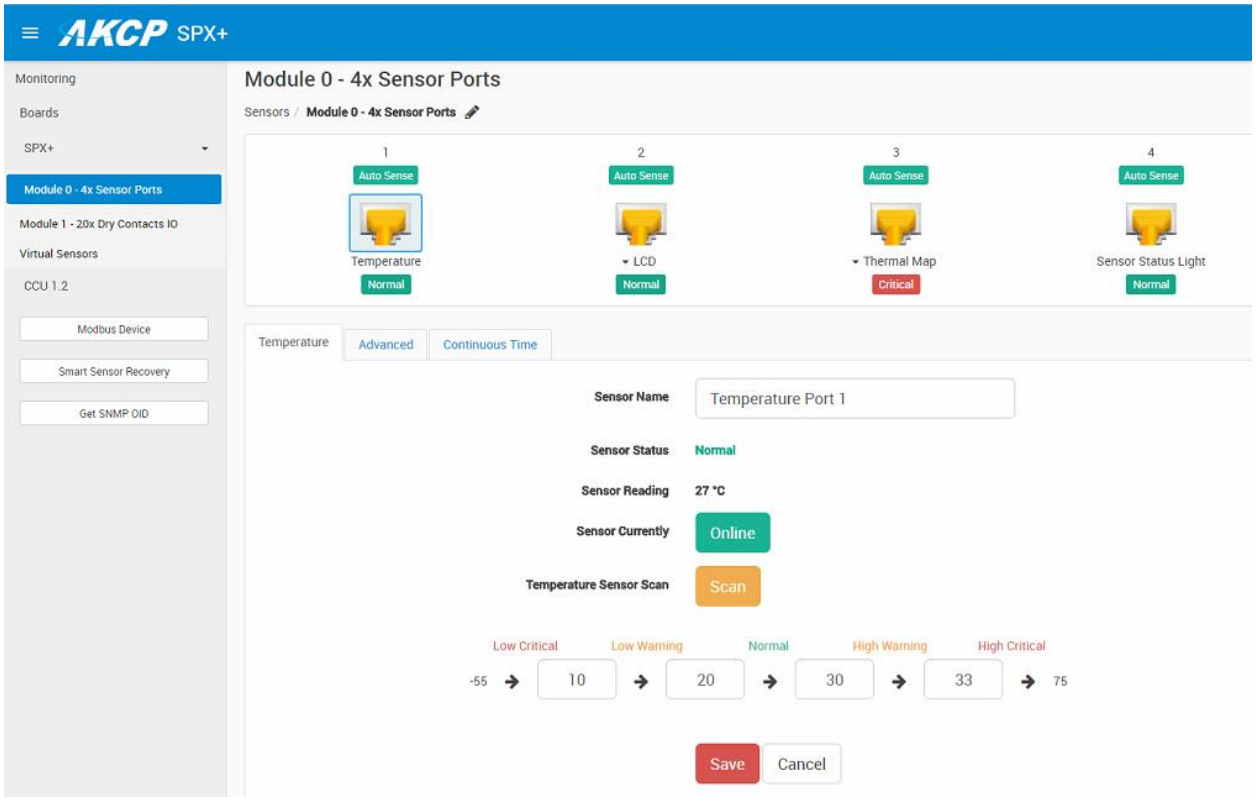
Status: If at any time communications with the temperature sensor are lost, the status of the temperature sensor is changed to sensorError. If communications with the temperature sensor are re-established the status will be formed by comparing the Degree to the high and low thresholds.

Degree Type: The Degree Type can be set to Fahrenheit or Celsius. When the Degree Type is changed all the threshold fields will change their values automatically. The securityProbe stores the thresholds for both Celsius and Fahrenheit independently allowing you to switch between the two.

Reading Offset: The Reading Offset parameter can be used to calibrate temperature and humidity sensors. If for example the actual reading of a sensor is 28 degrees Celsius and the Reading Offset is set to 2 the temperature will be displayed as 30 degrees Celsius.

Usually these settings can be configured on the Advanced tab of the sensor's settings.

Examples of the Battery Temperature sensor in the Web UI

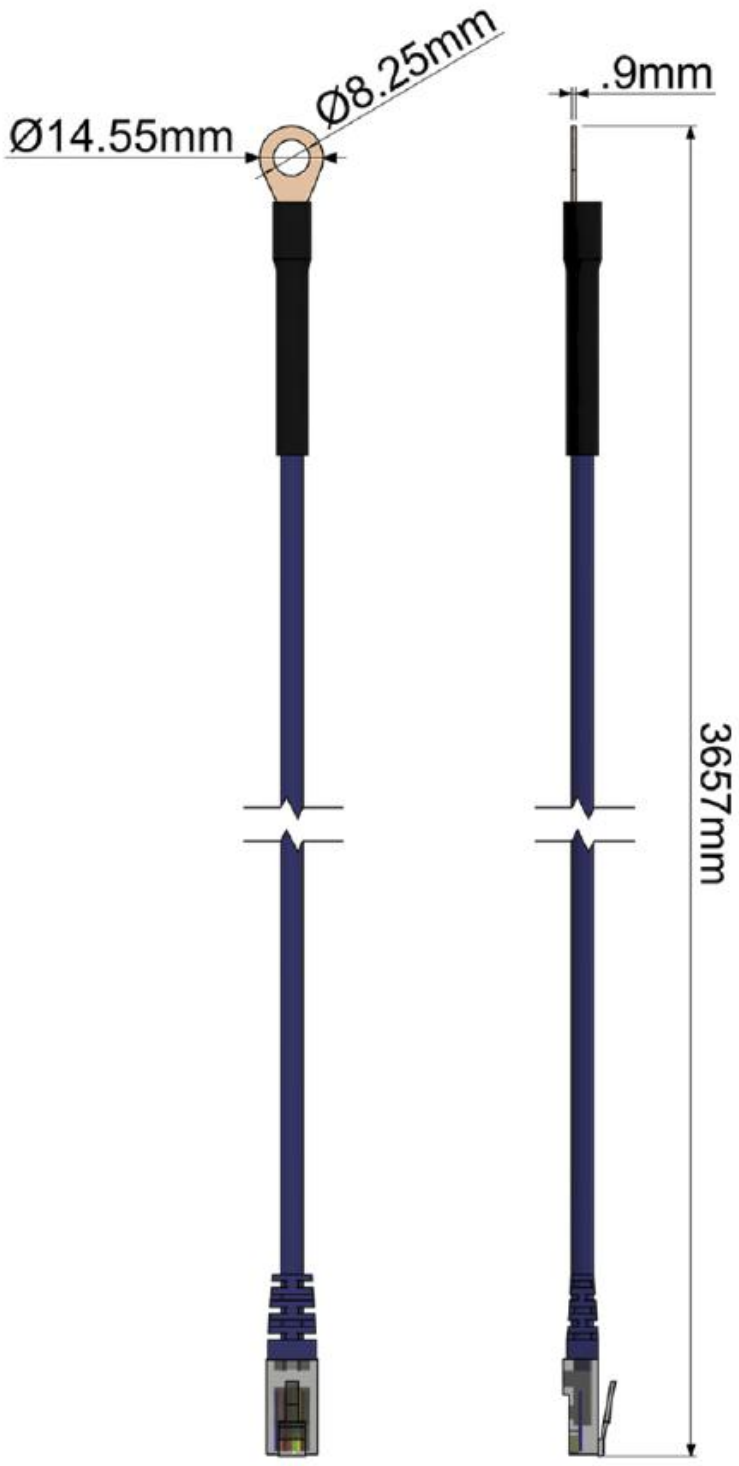


The screen shot above shows the sensor settings in the SPX+ web UI as an example. Please refer to the SP+ base units product manuals for more details.

The above two screen shots shows the SP2 base unit with a dual Temperature / Humidty sensor connected, and the sensor settings. Please refer to the sensorProbe base units product manual for more details.

If you connect the Battery Temperature sensor, it will only be shown as a single Temperature sensor.

Technical drawing



Technical specifications

Measurements range Celsius	-55°C to +75°C
Measurement resolution Celsius	1°C for the sensorProbes and 0.5°C for the securityProbe units.
Measurement accuracy Celsius	+/-0.5°C accuracy from -10°C to +75°C
Measurement range Fahrenheit	-67°F to +167°F
Measurement resolution Fahrenheit	1°F for the sendorProbes and 0.9°F for the securityProbe units.
Measurement accuracy Fahrenheit	+/-0.9°F accuracy from +14°F to +167°F
Tube Material	Stainless Steel
Communications Cable	RJ45 jack to temperature sensor using UTP Cat 5 wire
Sensor Type	Semiconductor microprocessor controlled
Power Source	Powered by the base unit. No additional power needed.
Power Consumption	Typical 10.70 mWatt, 2.14mA sensorProbe auto detects the presence of the temperature sensor.

Measurement Rate	One reading every second Up to 2 temperature sensors per sensorProbe2, 8 per sensorProbe8. You can connect up to 8 on the securityProbe main unit and 8 more on each E-sensor8 expansion module.
Temperature Description OID	.1.3.6.1.4.1.3854.1.2.2.1.16.1.1.<port>
Temperature Status OID	.1.3.6.1.4.1.3854.1.2.2.1.16.1.4.<port>
Temperature Degrees OID	.1.3.6.1.4.1.3854.1.2.2.1.16.1.3.<port>

This concludes the Battery Temperature Sensor Manual.

Please contact support@akcp.com if you have any further technical questions or problems.

Thanks for Choosing AKCP!