

Introducing the UT-ONE B03B

Batemika is introducing our new benchtop 3-channel thermometer readout UT-ONE B03B, which is replacing our existing UT-ONE B03A unit. UT-ONE B03A was a very successful and well-accepted instrument, but at this point we decided to implement several new features that were frequently requested by our customers. At the same time we kept the general design and all the features of the earlier model, so the new unit is fully backward compatible. The most notable new features of the new model are the 3-wire and 2-wire measurement for resistance thermometers, improved accuracy for the platinum resistance probes and extended range for the thermistor probes.

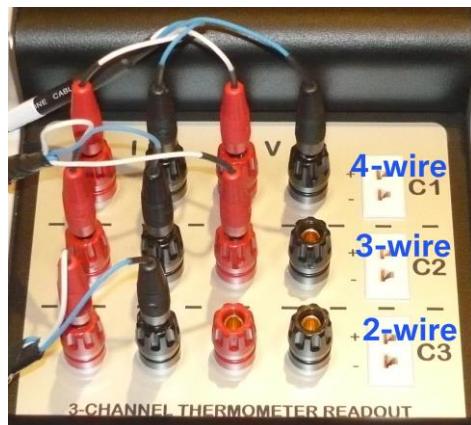


UT-ONE B03B 3-channel thermometer readout

3-wire and 2-wire resistance measurement

Best accuracy in resistance measurements is always achieved using the 4-wire measurement method, which fully eliminates the

measurement error caused by the resistance of connecting wires. 4-wire measurement is the default and recommended measurement mode for all our thermometer readouts. However, many applications require the user to perform the measurement in a 3-wire or 2-wire measurement mode, most commonly when calibrating customer thermometer probes with given connection configuration.



Connection of a Pt100 probe using 4-wire, 3-wire and 2-wire configuration

In a 3-wire measurement mode, thermometer readout uses a special acquisition procedure to determine the resistance of one connecting wire and applies this resistance to correct for the resistance of the other connecting wire. This efficiently removes most of the wire-resistance error, but any difference between the resistances of the wires will result in a small residual error. Note that this error is the result of the measurement method and not caused by the performance of the instrument.

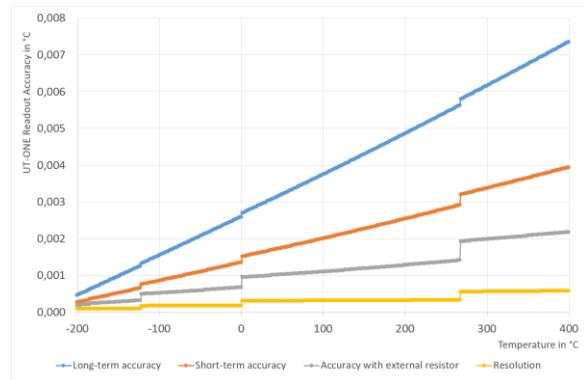
In a 2-wire measurement mode, thermometer readout measures the combined resistance of

the resistance sensor and connecting wires. This is applicable mainly to thermistor probes with high resistance, where the resistance of connecting wires has a negligible effect on the measurement results.

Connection of the resistance thermometer probe in a 2-wire, 3-wire or 4-wire connection configuration is straightforward and user can specify it during the channel configuration using the touch screen or remote interface.

Improved accuracy specification for platinum resistance thermometers

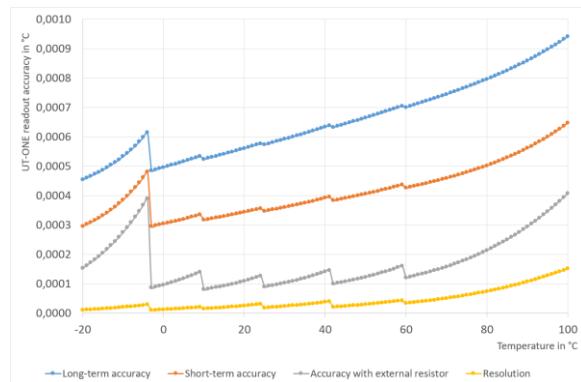
Improvements in our measurement circuit design and quality control procedures have enabled us to reduce the main component of the UT-ONE accuracy specification. Long-term stability specification has been reduced from 15 ppm/year for the UT-ONE B03A unit to 10 ppm/year for the UT-ONE B03B unit. This results in the thermometer readout accuracy (excluding probe) of less than 0.003 °C at 0 °C. Accuracy can be further reduced using an external reference resistor.



UT-ONE accuracy specification for Pt-100 probe

Extended thermistor range

Thermistors are excellent thermometer probes in many applications, but due to their exponential characteristics they inherently require a very wide measurement range. UT-ONE B03B now features a wider thermistor range of 0 to 80 kΩ, which is doubled compared to the UT-ONE B03A. At the same time, measurement current was reduced from 20 µA to 10 µA, which further decreases the self-heating effect during resistance measurement. The accuracy (excluding probe) of the new unit with the extended thermistor range remains below 0.001 °C for the most common 10kΩ thermistor probe.



UT-ONE accuracy specification for 10 kΩ thermistor probe

UT-ONE B03B has many more small improvements, which make it even more accurate, useful and user-friendly as its predecessor UT-ONE B03A. At Batemika measurement solutions we are sure that the new UT-ONE B03B 3-channel thermometer readout will be a valuable instrument in your daily measurement tasks.