

Specialists in calibration equipment for temperature & humidity since 1983

REFERENCE THERMOMETERS

- 5-point UKAS Certificate of Calibration included
- ±0.03 °C high system accuracy
- Supplied complete with high accuracy probe
- Ideal for calibration comparison checks

The Reference thermometers are high accuracy PT100 instruments that are supplied with a five-point UKAS Certificate of Calibration. Each certificate indicates deviations from standards at various check points: -18, 0, 40, 70 and 100 °C. Special points may be certified by arrangement with our UKAS calibration laboratory.

The Reference thermometers are ideal for comparison checking of the accuracy of other thermometers and probes, when used in conjunction with a stable temperature heat or chill source, see pages 4 and 5. The instruments measure temperature over the range of -199.99 to 199.99 °C with a resolution of 0.01 °C and an accuracy of ± 0.03 °C.

The units feature a simple on/off push button with open circuit 'Err' and low battery indication, when applicable. The Reference Plus thermometer incorporates the additional features of a max/min and hold function.

The Reference thermometers are supplied with a permanently attached, high accuracy probe incorporating a 1/10th DIN PT100 sensor. The probe measures Ø3.3 x 130 mm and is supplied with a one metre PVC lead.





The Comparator (814-132) provides an inexpensive way of checking the temperature of infrared thermometers when used in conjunction with a Reference thermometer.



Order code	Description
222-055	Reference
222-063	Reference Plus
830-221	Protective silicone boot - white
814-132	Comparator















Specification	Reference & Reference Plus	
Range	-199.99 to 199.99 °C	
Resolution	0.01 °C	
Accuracy	±0.03 °C (-49.99 to 149.99 °C) ±0.1 °C (-150 to 200 °C)	
Battery & life	3 x 1.5 volt AAA - 2000 hours	
Sensor type	PT100 1/10 th DIN	
Display	10 mm LCD	
Dimensions	25 x 56 x 128 mm	
Weight	210 grams	
UKAS Certificate of Calibration included		



REFERENCE THERMAPEN® THERMOMETER

- High accuracy with 0.01 °C or 0.1 °C resolution
- 5-point UKAS Certificate of Calibration included
- Compact, lightweight and easy-to-use
- Backlight display





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The Reference Thermapen thermometer is a high accuracy PT100 instrument that is supplied with a five-point UKAS Certificate of Calibration. Each certificate indicates deviations from standards at various check points: -18, 0, 40, 70 and 100 °C.

The Reference Thermapen thermometer is ideal for comparison checking of the accuracy of other thermometers and probes, when used in conjunction with a stable temperature heat or chill source, see opposite. The instrument measures temperature over the range of -69.99 to 199.99 °C, now featuring a user selectable resolution of 0.01 or 0.1 °C and an accuracy of ±0.05 °C.

The thermometer will power-off automatically after ten minutes, maximising battery life. This feature can be disabled if not required. Both low battery (icon) and open circuit indication are displayed, when applicable. Each Reference Thermapen is powered by a single AAA battery with a life expectancy of 500 hours (without backlight).

The Reference Thermapen incorporates a stainless steel, penetration probe (Ø3.3 x 108 mm) that conveniently folds back through 180° into the side of the instrument when not in use.





Stainless steel wall bracket (832-002) Stores the Reference Thermapen safely when not in use. Keyhole slot for hanging (screws not supplied) Measures 27 x 58 x 115 mm





Silicone boot with magnets (830 - 455)



Order code	Description	
222-215	Reference Thermapen	
830-455	Silicone boot with magnets	
830-110	Protective wallet	
832-002	S/steel wall bracket	
The Thermapen is supplied in a zip pouch (830-001)		

















Specification	Reference Thermapen	
Range	-69.99 to 199.99 °C	
Resolution	0.01 °C or 0.1 °C - user selectable	
Accuracy	±0.05 °C (-30 to 149.99 °C) otherwise ±0.2 °C	
Battery	1 x 1.5 volt AAA	
Battery life	500 hours (without backlight)	
Sensor type	PT100	
Display	9.8 mm LCD	
Dimensions	19.3 x 48.2 x 156.2 mm	
Weight	115 grams	
UKAS Certificate of Calibration included		



3000 SERIES LIGHTWEIGHT DRY-WELL CALIBRATORS

- Ideal for checking thermometer accuracy
- Portable temperature heat source

The 3000 series dry-well calibrators are small and lightweight heat sources, ideal for checking the accuracy of digital thermometers and temperature probes. The units have a temperature range of 33 to 250 °C with a resolution of 0.1 °C.

The dry-wells offer a high level of stability ($\pm 0.5\,^{\circ}$ C) and a stabilisation time of ten minutes. Plug it in, switch it on, set the verification temperature with the front panel buttons and insert your probe into the correct size well. Compare the temperature reading of your thermometer against the display and the difference is the error.

The 3001 dry-well will accept probe sizes Ø3.3, 4, 4.76 and 6.35 mm. The 3002 dry-well will accept probe sizes Ø3.3, 4.76, 6.35 and 9.6 mm. The 3003 dry-well will accept probe sizes Ø4.76 and 12.7 mm.

Order code	Description
271-301	3001 dry-well
271-302	3002 dry-well
271-303	3003 dry-well



Specification	3000 series dry-wells	
Range	33 to 250 °C	
Resolution	0.1 °C	
Accuracy	±0.5 °C (33 to 199.9 °C)	
	±1 °C (200 to 250 °C)	
Heating time	Ambient to 250 °C - min. 10 minutes	
Well depth	100 mm	
Power	230 volt AC (115 volt available)	
Dimensions	57 x 125 x 158 mm	
Weight	950 grams	
FREE traceable certificate of calibration included		

3101 DRY-WELL HEAT/COOL SOURCE CALIBRATOR

- Ideal for checking the accuracy of thermometers
- Accepts a wide variety of probe diameters

The 3101 dry-well features an easy-to-read LED display with a temperature range of -10 to 110 $^{\circ}$ C and a resolution of 0.1 $^{\circ}$ C. Heating time, ambient to 100 $^{\circ}$ C or cooling time, ambient to 0 $^{\circ}$ C is ten minutes.

The 3101 is excellent for checking the calibration of a wide range of instrumentation including digital thermometers and temperature probes, either above or below ambient temperature. The unit incorporates two removable wells/inserts, both Ø13 mm in diameter and will accept probe sizes Ø3.3, 4.1, 4.8, 6.4 and 9.6 mm.

Each 3101 is supplied with two inserts of the customer's choice.

Order code	Description
271-401	3101 dry-well
271-321	Ø3.3 mm ID brass insert
271-322	Ø4.1 mm ID brass insert
271-323	Ø4.8 mm ID brass insert
271-324	Ø6.4 mm ID brass insert
271-325	Ø9.6 mm ID brass insert



Specification	3101 dry-well	
Range	-10 to 110 °C	
Resolution	0.1 °C	
Accuracy	±0.5 °C (-10 to 99.9 °C)	
	±1 °C (100 to 110 °C)	
Heating time	Ambient to 100 °C - min. 10 minutes	
Cooling time	Ambient to 0 °C - 10 minutes	
Well depth	100 mm	
Power	12 to 24 volt DC*	
Dimensions	110 x 153 x 186 mm	
Weight	1800 grams	
*Supplied with 230/115 volt AC power adaptor FREE traceable certificate of calibration included		



IR-500 BLACK BODY CALIBRATOR

- Ideal for checking the accuracy of infrared thermometers
- Wide temperature range 50 to 500 °C

The IR-500 Black Body Calibrator is a stable heat source for checking the calibration of infrared digital thermometers that require regular temperature calibration checks or validation. The unit features an easy to read LED display, and controls the black body surface temperature over the range of 50 to 500 °C. It reaches an upper temperature of 500 °C in about 40 minutes.

Simply set the verification temperature on the digital display of the IR-500 Calibrator, allow time to stabilise and then point your infrared thermometer at the Ø58 mm black body. Compare the temperature readings on the IR-500 Calibrator display and the infrared thermometer under test, and the difference is the error. The isothermal Ø58 mm black body target is manufactured to an emissivity of approximately 0.95, which is ideal for most industrial infrared thermometers.

For increased accuracy checks, use a Reference thermometer (see page 2 for more details), insert the fixed Ø3.3 mm precision PT100 probe into the pre drilled calibration well. UK power lead included.

Order code Description

822-400 IR-500 Black Body Calibrator



Specification	IR-500 Black Body Calibrator	
Range	50 to 500 °C	
Resolution	0.1 °C/ °F	
Accuracy	±1 °C below 100 °C ±2 °C from 100 to 200 °C ±3 °C from 200 to 500 °C	
Heating time	40 minutes to max	
Cooling time	30 minutes max to 100 °C	
Emissivity	0.95	
Target size	Ø58 mm	
Power	110 volt AC, 3A or 230 volt AC (±10%), 1.5A	
Dimensions	114 x 180 x 233 mm	
Weight	2682 grams	
FREE traceable certificate of calibration included		

*It is possible to achieve a higher level of accuracy, better than ±0.5 °C if the IR-500 Calibrator is used in conjunction with a certified Reference Thermometer (see page 2 for details).

CALIBRATION WATER BATH

- Ideal for checking the accuracy of probe thermometers
- Temperature range 25 to 95 °C

The Calibration Water Bath offers a compact, accurate and reliable system which can be used for the temperature calibration of thermometers and temperature probes using the comparison method. The bath operates over the range 25 °C to 95 °C with a temperature accuracy of ± 1 °C (25 to 70 °C) * and stability of ± 0.1 °C with a bath uniformity of ± 0.1 °C when measured from centre to any corner.

The water bath features a user friendly LED display, with minimal setup required. The stainless steel bath capacity is 5 litres, and incorporates a variable flow/speed pump of 0 to 20 litres per minute. For increased accuracy checks, it is recommended that a Reference thermometer is used as a calibration reference. (See page 2 for more details).

For continuous use in the temperature range 25 to 60 °C we recommend the bath be filled with distilled water, between 60 to 80 °C 15% glycerine water solution and between 80 to 95 °C a suitable silicone oil.

Each bath is supplied complete with lid, drain tap and carry handles. UK power lead included.

Order code Description

822-950 Calibration Water Bath



Specification	Calibration Water Bath
Range	25 to 95 °C
Resolution	0.1 °C/ °F
Accuracy	±1 °C (+25 to 70 °C)*
Bath capacity	5 litres
Pump flow/speed	0 to 20 litres per minute
Bath stability	±0.1 °C over a 45 minute period
Bath uniformity	±0.1 °C when measured from centre to any corner
Power	230 volt AC (±10%) 1.5A
Internal dimensions	130 x 130 x 260 mm
External dimensions	318 x 380 x 445 mm
Weight	12000 grams

*It is possible to achieve a higher level of accuracy, better than ±0.2 °C if the calibration bath is used in conjunction with a certified Reference Thermometer (see page 2 for details).



MICROCAL SIMULATORS

- Test thermocouple type K, J, T, R, N, S & E thermometers
- For frequent checking of thermometer accuracies
- 12 adjustable or 23 fixed temperature points
- 4 models available Simulator or Simulator/thermometer

The MicroCal thermocouple simulators help ensure that the frequent checking of thermometer accuracies are a routine operation. These instruments are designed to simulate a chosen temperature to test thermocouple thermometers without the need for specialised equipment or conversion tables. The MicroCal 1 Plus also measures and simulates temperature.

The MicroCal 1, MicroCal 1 Plus & the MicroCal 2 have 12 preset temperatures for type K thermocouple -20, -10, 0, 10, 30, 50, 100, 195, 250, 500, 800 and 1000 °C, any of these temperatures can be modified and saved by the user. The factory default temperatures can be recalled at any time.

The MicroCal 3 has 23 fixed temperature points for type K thermocouple -100, -50, -20, -10, 0, 10, 20, 30, 40, 50, 60, 80, 100, 150, 195, 250, 300, 400, 500, 600, 800, 1000 and 1200 °C.

All models feature a custom 10 mm LCD display with alpha-numeric display line to prompt the user when changing parameters. Selectable parameters include; °C/°F, auto-power-off - enable/disable, CJC - internal/external and display contrast adjustment.

Each MicroCal is supplied with a one metre PVC thermocouple lead with miniature thermocouple connectors and a five-point UKAS Certificate of Calibration. Each certificate indicates deviations from standards at the various points.

An optional lead set is available for the MicroCal 1 and MicroCal 1Plus comprising of six leads, one for each thermocouple type K, J, T, R/S, N and E.



Thermocouple type K Range -200 to 1372 °C Thermocouple type J Range -200 to 1200 °C Thermocouple type T Range -270 to 400 °C Thermocouple type R Range 0 to 1768 °C Thermocouple type N Range -200 to 1300 °C Thermocouple type S Range 0 to 1768 °C Thermocouple type E Range -140 to 1000 °C



Incorporates a foot stand



Lead Set (6 leads) 816-100



Order code	Description
271-100	MicroCal 1
271-101	MicroCal 1 Plus
271-200	MicroCal 2 - type K
271-210	MicroCal 3 - type K
816-100	Lead set (6 leads)
830-205	Protective silicone boot
832-115	Acrylic wall bracket







Specification	MicroCal 1 & 1 Plus	MicroCal 2	MicroCal 3
Range	(see table above)		
Temp points	12 adjustable presets	12 available	23 fixed presets
Accuracy	±0.3 °C (dependant upon tc type)	±0.3 °C	±0.5 °C
Battery	2 x 1.5 volt AAA		
Battery life	300 hours		
Sensor type	Thermocouple type K, J, T, R, N, S & E (selectable)	Dedicated type	K thermocouple
Display	Custom LCD		
Dimensions	35 x 73 x 141 mm		
Weight	175 grams		
5-point UKAS Certificate of Calibration included			

For more information on the above simulators please visit our website or contact our sales office.



MICROCHECK 3-POINT CHECKER/SIMULATOR

- For regular checking of thermometer accuracies
- 3-point UKAS Certificate of Calibration
- Simple & easy-to-use
- 4 models available

The MicroCheck temperature checkers have been developed to verify the continuing accuracy of type K thermocouple thermometers with a 0.1 or 1 °C resolution.

All checkers feature a custom 10 mm LCD display with alpha-numeric display line to prompt the user when changing parameters. Selectable parameters include: °C/°F, auto-power-off - enable/disable, CJC - internal/external and display contrast adjustment.

The MicroChecks simulate three fixed temperatures, enabling users to check the accuracy of each instrument at three known points without the need for specialist equipment.

Each MicroCheck is supplied with a one metre PVC type K thermocouple lead with miniature connectors and a three-point UKAS Certificate of Calibration. Each certificate indicates deviations from standards at the various points.



Order code	Description
271-011	MicroCheck 1
271-012	MicroCheck 2
271-014	MicroCheck 3
271-015	MicroCheck 4
830-205	Protective silicone boot
832-115	Acrylic wall bracket







Acrylic wall bracket (832-115)

Protective silicone boot (830-205)

Specification	Range
MicroCheck 1	0 °C, 100 °C & 500 °C
MicroCheck 2	-20 °C, 20 °C & 200 °C
MicroCheck 3	-20 °C, 0 °C & 220 °C
MicroCheck 4	-20 °C, 0 °C & 100 °C

A 3-point UKAS Certificate of Calibration is included with each MicroCheck checker



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Specification	MicroCheck
Range	(see table above)
Temp points	3 fixed temperatures
Accuracy	±0.5 °C
Battery	2 x 1.5 volt AAA
Battery life	300 hours
Sensor type	type K thermocouple
Display	Custom LCD
Dimensions	35 x 73 x 141 mm
Weight	175 grams
UKAS Certifica	ate of Calibration included



CALIBRATION THERMISTOR TEST CAPS



- Provides assurance that thermometer readings are accurate
- Supplied with a UKAS Certificate of Calibration

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These thermistor test caps are suitable for checking the accuracy of the Therma 20, Therma 22 or any equivalent thermistor thermometer.

Simply plug in the desired test cap and the display on the thermometer should show the same temperature as the certified value.

Each test cap is supplied with a UKAS Certificate of Calibration with a guaranteed uncertainty of ±0.1 °C.





Order code	Description
286-001	Thermistor test cap -18 °C
286-002	Thermistor test cap 0 °C
286-003	Thermistor test cap 3 °C
286-004	Thermistor test cap 70 °C
286-005	Thermistor test cap 100 °C
LIKAS Cartif	ficate of Calibration included

CALIBRATION PT100 TEST CAPS

- Validates the accuracy of PT100 thermometers
- Supplied with a UKAS Certificate of Calibration



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These PT100 test caps are suitable for checking the accuracy of the Precision PT100 thermometer or any platinum resistance thermometer fitted with a Binder connector.

Simply plug in the test cap and the display on the thermometer should show the same temperature as the certified value.

Each test cap is supplied with a UKAS Certificate of Calibration with a guaranteed uncertainty of ± 0.1 °C.





Order code	Description
282-001	PT100 test cap -18 °C
282-002	PT100 test cap 0 °C
282-003	PT100 test cap 3 °C
282-004	PT100 test cap 70 °C
282-005	PT100 test cap 100 °C
UKAS Certif	icate of Calibration included



UKAS TEMPERATURE CALIBRATION

- Thermometer temperature range -100 to 250 °C
- Rapid turnaround normally within 5 days
- Certified uncertainties (CMCs) from ±0.02 °C
- 1 to 5-point UKAS Certificates



Our in-house UKAS accredited calibration laboratory for temperature has a wide measurement range of -100 to 250 °C with a calibration and measurement capability of 0.02 °C. The laboratory can also measure resistance up to 10 M Ω (i.e. resistance decade boxes and PT100/RTD temperature simulators) and DC voltage 0 to 100 mV (i.e. thermocouple simulators and calibrators). Original UKAS Certificates provide proof that instruments and probes have been calibrated against nationally approved standards.

Thermometers & Probes

Each UKAS Certificate indicates the deviations from standards at various check points, the standard being -18, 0, 40, 70 and 100 °C with a guaranteed uncertainty, dependant on the probe type. See calibration and measurement capability table below.

Test Caps & Simulators

Each UKAS Certificate indicates the deviations from standards at specific check points (-18, 0, 3, 70 and 100 °C) to an uncertainty of ± 0.1 °C (resistance) or ± 0.15 °C (thermocouple).

Data loggers

Each UKAS Certificate indicates the deviations from standards at three check points (-18, 0 and $40\,^{\circ}\text{C}$) to an uncertainty of $\pm 0.05\,^{\circ}\text{C}$.



Order code	UKAS Certificate - Temperature
890-200-5	Instrument only standard 5-point
890-210-5	Instrument & probe system 5-point
890-215	Checker 3-point
890-230	Test cap 1-point
890-235	Simulator 5-point
890-240-3	Data logger 3-point



CALIBRATION & MEASUREMENT CAPABILITY (CMC)

Thermistor therm	· · · · · · · · · · · · · · · · · · ·
-50 to 150 °C	CMC 0.04 °C
-100 to -50 °C	CMC 0.05 °C
PT100 (resistance	sensors) thermometer & probe
-80 to 250 °C	CMC 0.04 °C
-100 to -80 °C	CMC 0.13 °C
Thermocouple the	ermometer & probe
-80 to 250 °C	CMC 0.15 °C
-100 to -80 °C	CMC 0.17 °C
Temperature data	a loggers
-50 to 100 °C	CMC 0.05 °C
Thermistor & PT10	00 test caps
-18 to 100 °C	CMC 0.1 °C
Thermocouple sir	nulators
-200 to -50 °C	CMC 0.25 °C
-50 to 1372 °C	CMC 0.15 °C



UKAS HUMIDITY CALIBRATION

- Certified uncertainties (CMCs) from 0.7 %rh, 0.19 °Cdp & 0.14 °C Air
- Flexible certification select the points you need
- Qualified & experienced laboratory personnel
- Rapid turnaround



Our in-house humidity laboratory is equipped with two of the world's premier humidity chambers together with a high accuracy mirror hygrometer. The Thunder Scientific 2500 humidity chamber uses two-pressure technology to generate controlled humidity conditions, which has long been the recognised standard for instrument calibration, test and verification, along with the new state-of-the-art HYGROGEN2 - HG2-XL chamber which generates stable temperature and humidity conditions in rapid time. These methods of generation are a fundamental technology, enabling confidence in traceability to National Standards. This, combined with MBW referenced mirror hygrometers, ensures the standard of calibration is to a very high level. If you then combine this with UKAS Accreditation. and a rapid turnaround of your instrument, you can be sure that the service offered by our humidity laboratory will meet your requirement.





Accurate monitoring of humidity can increase the efficiency of productivity in many aspects of production. An increasing number of employers are also realising the importance of healthy working environments, which includes the control of humidity to help prevent airborne bacteria, eliminate static shocks and reduce eye-strain.

As with most digital equipment, but even more so with hygrometers, there is a tendency for drift over a period of use. Therefore a regular calibration by comparison against Standards, traceable to National Standards, provides confidence in the continued accuracy of your instrument.

Air temperature capability

Our humidity laboratory is also UKAS accredited for air temperature measurement certification. Please see below for calibration and measurement capability (CMC).

Order code	UKAS Certificate - Humidity
890-110	3-point 25, 50 & 75 %rh
890-112	1-point customer specified
890-114	5-point customer specified
Order code	UKAS Certificate - Air Temperature
Order code 890-120	UKAS Certificate - Air Temperature 2-point 10 & 40 °C
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CALIBRATION & MEASUREMENT CAPABILITY (CMC)

Humidity	
10 to 90 %rh @ 0 to 60 °C	CMC 1.2 %rh
10 to 90 %rh @ 20 to 24 °C	CMC 0.7 to 1.1 %rh
Air temperature	
0 to 60 °C	CMC 0.24 °C

Alternative temperature points can be offered to customer requirements, please contact our Service department for further details.

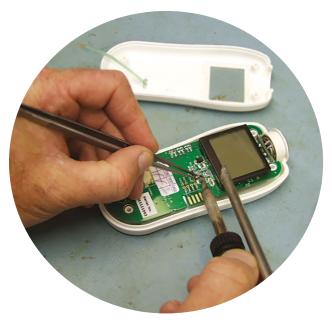


SERVICE & REPAIR OF THERMOMETERS & PROBES

- Additional one year's guarantee on repaired instruments
- Thermometer, probe & recalibration service available
- Rapid turnaround normally within 5 days
- Qualified & experienced technicians

One of the true advantages of being a manufacturer is that we know how our instruments work and how to repair them. We are fully committed to supporting our customers, no matter which instrument they have chosen. Our service department is equipped with the best of resources and all repairs are undertaken in-house to give an unrivalled after-sales-service.

The vast majority of instruments that are damaged through use in busy commercial environments can be repaired. Naturally, if the instrument is outside the warranty period, there is a charge. But we wish to make customers aware that it can be cost-effective to repair an instrument, rather than throw it away and buy a new one.



Order code	Description - Repair
890-254	Waterproof thermometers
890-257	Therma Series probe thermometer
890-295	ThermaData loggers
890-303	Thermapen Classic thermometers
890-310	Therma series thermometers
890-318	CaterTemp Metal thermometer
890-319	Therma Metal thermometer
890-403	Thermapen/IR thermometers
890-500	TempTest thermometers
890-570	BlueTherm thermometers
890-670	RayTemp infrared thermometers
890-690	ThermaData Wi-Fi loggers
890-700	Reference Thermometer
890-800	8000/8100 pH Meters
890-850	8100 Plus pH Meter



Whilst an annual calibration check is all you may need for continued confidence in your instrument, there are times when you may wish for the added assurance of a full service, which includes a recalibration and the added benefit of a further one year's guarantee.

Instruments for service or repair should be sent to your local distributor or direct to ETI, carriage paid and labelled with the sender's name, address, telephone number and a brief description of the problem to assist with rapid diagnosis.

Contact our after-sales team for advice on any non-ETI units you wish to have repaired or calibrated. The prices quoted in our price list below are a guide, for a more comprehensive price structure, please contact our after-sales team.

Order code	Description - Recalibration
894-254	Waterproof thermometers
894-257	Therma series probe thermometer
894-303	Thermapen thermometers*
894-310	Therma series thermometers
894-318	CaterTemp Metal thermometer
894-319	Therma Metal thermometer
894-331	MicroTherma thermometers
894-500	TempTest thermometers
*excludes Tl	hermapen IR

Order code	Description - Probe repair
890-400	Thermocouple probe
890-410	Thermistor probe
890-420	PT100 probe

