



KAYE Thermal Validation Equipment

DISCOVER

Withnell Sensors

Temperature & Humidity Specialists

Withnell Sensors offers expert support and product solutions for your temperature and humidity measurement requirements. With over 40 years combined experience in our field, we continue to be sought out as experts in the services that we offer.

Established over 16 years.

Philip de Freitas, our Managing Director, has worked in the industry for over 30 years predominantly specialising in equipment by the well-known validation brand Kaye. Leaving the manufacturer in 2006 and setting up his own company, Philip has since grown the team and the business into the multi-faceted, international organisation it is today.

Customer Care Promise

Customer service is important to us, it is a fundamental part of our ethos and has acted as the driving force behind many of our commercial decisions. We aim to actively incorporate all feedback to ensure that we deliver better results for the future. Servicing an array of customers from small businesses through to multi-national organisations, we always endeavour to offer consistently high levels of service.

Exceptional Standards

Our background is within the pharmaceutical and Biotechnology sectors where we are practised to the high standards expected from world leaders in this field. We have adopted the same high standards across our business. Our in-house laboratory is accredited to the internationally recognised ISO/IEC 17025:2017. Our accreditation is a representation of our ability to offer complete quality assurance.

KAYE

At the forefront of innovation

Kaye instruments has been at the forefront of high accuracy process measurement for almost sixty years. The brand has been an industry leader, used by many leading pharmaceutical and biotechnological manufacturers to ensure compliance with control measures and regulatory requirements for critical thermal processes.

The company specialises in thermal process validation, environmental monitoring & sensor calibration, Kaye technology has provided the most precise and user-friendly measuring systems on offer in today's market. The products increase validation process efficiency and documentation of the results through innovative and unique to the market turnkey system solutions. We offer a complete range of wired & wireless systems, real-time RF-based systems, baths & temperature standards, all engineered to provide the most accurate process measurement available on the market.



Data Loggers & Thermocouples

A range of equipment to suit all requirements. Expert independent advice is available.



Fridges, Freezers & Climatic Chambers

An exclusive range of specialist, high performance equipment.



Service, Calibration & Mapping

Experienced engineers providing service on-site or at our facility in Lancashire. Offering a range of UKAS accredited calibrations.



Ultra-Low Temperature Storage

Ultra-low temperature storage of biological materials, samples, vaccines and more for scientific research and clinical applications.



Thermal Validation Rental Equipment

Validation equipment for unexpected demands, shutdown periods and new plant commissioning.



Calibration Equipment

Calibration baths and equipment for in house or laboratory calibrations.

Customers we are proud to have worked with:



Kaye AVS

Advanced Validation System

The Kaye Thermal Validator AVS (Advanced Validation System) provides highly accurate sensor measurements, meets GMP requirements for calibration and traceability to national standards, generates compliant reports and manages the validated assets and validation equipment. To add, the advanced thermal validation system offers better-quality hardware features, an easy to use data handling concept and an intuitive, user-friendly software interface.

The Kaye AVS operates with an integrated validation system, providing improved data management as well as saving you valuable time and money through the simplified validation process. The Kaye Validator AVS provides a completely new and upgraded validation concept. The AVS console will be the common platform for all validation products going forward. It is dedicated specifically for validation, removing worries about operating systems. The Software is preloaded and ready to go, with a customised interface for validation equipment, simplifying the validation process.



Successor to the Validator 2000



Integrated validation system



Cost and time efficient



Simplified validation process

Technical Specifications:

Analog Input	Up to 48
Thermocouples	Type T, J, K, E, B, R, N, S: 0.1°C; T + limited range 0.01°C resolution
Scanning Speed	36 channels in 1 sec. and 48 channels in 2 sec.
Internal Memory	4gb for data protection
Input Impedance	10KΩ. Source greater than 10KΩ produces open circuit indication
Common Mode Rejection	160 db (8 inputs/sec) @ line frequency 145 db (12 inputs/sec) @ line frequency 140 db @ DC
Maximum Common Mode Voltage	100V pk ch-to-ch 350V pk ch-to-ch to frame ground
Normal Mode Rejection	82 db @ 60 Hz (8 inputs/sec) 69 db @ 60 Hz (12 inputs/sec)
Voltage Input	0-10 VDC
Voltage Input Accuracy	30 days: $\pm(0.003\%$ of reading + 2 counts + 4 microvolts) 1 year: $\pm(0.006\%$ of reading + 2 counts + 4 microvolts)
Sensitivity	0.5 microvolts/count on most sensitive range
Voltage Temp. Coef.	$\pm(0.1$ microvolts + 0.001% reading)/°C
Compensator Temp. Coef.	$\pm 0.01^\circ\text{C}$ per °C
Input Terminal Temperature Non-uniformity	$\pm 0.1^\circ\text{C}$ from calibrated terminal
Input Ranges	-6 to 30mV, -12 to 60mV, -60 to 300mV, -2 to 10V
Environmental Ranges	Temperature: 0 to 50°C (32 to 122°F) Relative humidity: 95% non-condensing
Size	190H X 411W X 381 mm D (457 mm with SIM) 7.5 in H x 16.2 in W x 15 in D (18 in with SIM)
Weight	10.60 Kg
Battery	Lithium ion with minimum 3 hours of battery backup

Kaye LTR-150 (-30 to 150°C)

Dry Block and Liquid Bath

All-in-One Temperature Calibrator

The Kaye LTR-150 is an all-in-one calibrator, providing a flexibility and ease of use. It is the most advanced Multi-purpose calibrator specifically designed to address the capacity and flexibility needs for thermal validation. It has a 48 thermocouples capacity, functions as a Dry Block, Liquid Bath or Surface calibrator and saves hours of time and effort when calibrating or verifying validation sensors. The LTR-150 is backward compatible with the Kaye Validator AVS, Kaye Validator 2000, Kaye ValProbe or Kaye RF ValProbe software for automatic sensor calibration or can be utilised as stand-alone system via its simplistic and intuitive touch screen display.



All in one temperature calibrator



Fast heating and cooling times



Capacity of up to 48 thermocouples



Stability from +/- 0.01°C and uniformity 0.1°C

Technical Specifications:

Dry Block	Temperature Range : -30°C to 150°C	Accuracy: ±0.1°C	Stability: ±0.010°C	Uniformity: 0.1°C
Micro Bath	Temperature Range : -30°C to 150°C	Accuracy: ±0.15°C	Stability: ±0.010°C	Uniformity: 0.15°C
Surface	Temperature Range : -25°C to 150°C	Accuracy: ±1°C	Stability: ±0.15°C	
Heating/Cooling time	20°C to -25°C: 45 min. 20°C to 121°C: 30 min. 121°C to 20°C: 30 min. -30°C to 20°C: 20 min.			
General Data	Interface: -Serial to Validator / Ethernet / 3 X USB Dimensions: 210 mm x 300 mm x 380mm Weight: 15 Kg			

Kaye LTR-90

Ultra-Cool Dry Block Calibrator

The Kaye LTR-90 is an ultra-cool dry well calibrator designed for portability and ease of operation. It operates from -90°C to +140°C and delivers fast response, high stability, and automated sensor calibration for ultra-low temperature applications. The LTR-90 is ideal for calibrating temperature sensors used in cold rooms, incubators, autoclaves, freeze dryers, freezers, and cryo units.



Ultra cool



Versatile & precise



Lightweight & rugged



Stability of +/- 0.015°C

Technical Specifications:

Temperature Range (At 23°C ambient temperature)	-95° to 140°C	Display Accuracy	±0.2°C Full Range
Display Resolution	-0.01°C	Accuracy (with External Reference)	± 0.05 °C Full Range
Stability	±0.015°C Full Range	Stabilization Time	15 min.
Heating/Cooling time	-95°C to 140°C: 40 min. 23°C to -90°C: 80 min. 23°C to -95°C: 90 min. 140°C to 23°C: 60 min.		

Kaye HTR-420

Dry Block Temperature Calibrator

Flexible and easy to use, the Kaye HTR operates over a wide range of 30 to 420°C. The HTR-420 is the most advanced high temperature calibrator specifically designed to address the capacity and flexibility needs for thermal validation. The HTR-420 is able to calibrate 48 thermocouples at one time and saves hours of time and effort when calibrating or verifying validation sensors. The new Dry Block Temperature Calibrator is backward compatible with the Validator 2000, Validator AVS, ValProbe or RF ValProbe software for automatic sensor calibration or can be used stand-alone via its easy to use touch screen display.



Robust and lightweight portable system



Temperature range 30°C to 420°C



Touch screen model available



Capacity of up to 48 thermocouples

Technical Specifications:

Dry Block	Temperature Range : 30°C to 420°C Accuracy: ±0.1°C Stability: ±0.010°C Uniformity: 0.1°C
Heating Time	30°C to 100°C: 7 minutes 30°C to 350°C: 20 minutes
Cooling Time	350°C to 125°C in 20 minutes 350°C to 50°C in 40 minutes
Block Dimensions	Diameter: Ø 60 mm Depth: 170 mm
General Data	Interface: Serial to Validator / Ethernet / 3 X USB Dimensions: 215 mm x 290 mm x 345 mm Weight: 11 Kg

Kaye CTR-25

Portable Liquid Calibration Bath

The Kaye CTR-25 is the most up to date model of a long line of advanced calibration dry blocks and baths designed to meet the specific needs of thermal validation. The CTR-25 was designed with key benefits in mind; featuring unmatched portability, capacity, speed, and accuracy requirements compared with other liquid baths on the market today. The CTR-25 is perfectly suitable for verifications of up to 10 data loggers.



Designed with portability in mind



Temperature range -25°C to 140°C



Stability 0.01°C and uniformity 0.2°C



Easily hold 10 loggers and 1 IRTD

Technical Specifications:

Temperature Range (At 25°C ambient temperature)	-25°C to 140°C (closed cover)	Display Accuracy	0.1°C
Display Resolution	0.01°C	Stability	0.01°C
Uniformity	0.02°C	Repeatability	0.04°C
Heating/Cooling time	-25° to 25°C: 35 min. 25°C to 140°C: 55 minutes 140°C to 25°: 45 minutes 25°C to -25°C: 75 minutes		
Fluid Volume	2.5 liters	Maximum Fluid Depth	154mm
Size	382mm x 242mm x 400mm	Weight	20 Kg

Kaye IRTD

Intelligent Resistant Temperature Device

The Intelligent Resistant Temperature Device (IRTD) is a secondary standard with a completely self-contained measurement system, including electronics for calibration and temperature conversion. Kaye's IRTD provides ultra-high accuracy temperature data to your computer with no additional measurement or readout equipment required. The IRTD removes common sources of error because its integrated electronics and sensor are calibrated as a single instrument. Analog to digital conversion is automatic - no manual interpolations or calculations are necessary.



Temperature range
-196°C to 420°C



Accuracy over range
+/- 0.025°C



Resolution
0.001°C



Suitable in most temp. validation applications

Technical Specifications:

Temperature Range	196 to 420°C
Accuracy Over Range	0.025°C
Resolution	0.001°C
Sensor Element	200 Ohm Platinum RTD Sensor
Sheath Material	Inconel 600
Minimum Immersion Depth	101.6 mm
Calibration	Traceable to NIST, DAkKS calibrated (Europe); recommended calibration period is 1 year
Power to Probe	Unregulated DC, 10 to 25V, first probe: 850mW at 15V; each additional probe 550mW
Measurement Rate	1 reading per second
Environmental	Ambient Temperature Range: 0 to 60°C (32 to 140°C) Humidity 0 to 95% non condensing
Dimensions	Overall length 603mm. Grip: 89mm x 32mm. Sensor sheath: 457mm x 6.35mm.

Thermocouples:

We offer different types of thermocouples to suit differing applications, if there is a type of thermocouple that we have not listed which you feel would be beneficial in the pharmaceutical manufacturing field then please let us know. We always manufacture and stock these thermocouples:

Premium Grade Autobond Thermocouples

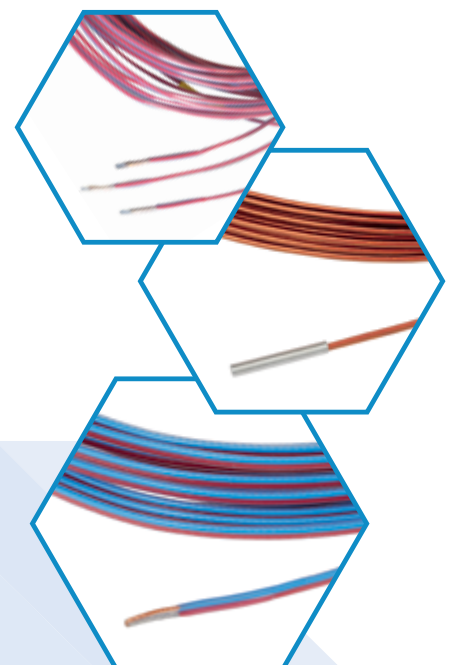
The Autobond wire is designed to minimise leakage of water or steam through standard thermocouple wire. The Autobond wire eliminates the outer clear PTFE jacket which is where 90% of moisture creep occurs.

PTFE 3 & 7 Strand Type 'T' Thermocouples

Withnell Sensors premium Type 'T' thermocouple wire is available in 3 and 7 strand configurations, individually insulated with an optional overall clear PTFE insulation.

Kapton Thermocouples

Seven strand Kapton insulated wire is used for dry heat ovens and Tunnels, and is rated up to 350 °C, this wire must only be used in for dry heat applications as any moisture or oil can damage the insulation properties.



Validation Rental Equipment



We maintain stock of many of these systems for customers who may need to hire additional equipment at short notice, and we manufacture thermocouples specifically for the Kaye Validator, made at bespoke lengths to meet your validation requirements.

At Withnell Sensors we have an expert service team who have worked with this equipment for many years and who are happy to answer your questions and provide support where required.

- ✓ **Minimum rental period from just one week**
- ✓ **Supplied with UKAS accredited calibration certificate**
- ✓ **Supplied with shipping case and accessories**



Validator AVS



Validator 2000



IRTD



Ametek Dry Well



Autoclave Pressure Transmitter

Kaye Service & Calibration

We offer a full range of calibration services for your Kaye equipment

Our engineers have many years of experience working with Kaye equipment, our Managing Director sold this product range throughout the UK and Ireland for over 25 years. Our service engineers have helped many customers with Kaye equipment calibration and support with various technical queries-if you need any help with your equipment then please don't hesitate to get in touch. We appreciate that some of our customers have a requirement to have their calibration performed on-site. Our engineers are field based so, upon customer request, we will try to accommodate field calibration.

We can also offer UKAS accredited Kaye equipment calibration which is completed at our lab in Lancashire. This ensures that we can offer the best possible measurement uncertainties for your calibration. At the moment we are the only service provider in Europe able to offer an ISO 17025 accredited calibration of the Kaye Validator.

- ⚙️ **Calibration for the full range of Kaye Validation Equipment**
- ✓ **Flexible service options; on-site or in our lab**
- 🔄 **Quick turn-around times available, minimise downtime**



Validator AVS



Validator 2000 and Sensor Input Modules (SIMs) On Site Service



HTR Temperature Reference Baths



LTR Temperature Reference Baths



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