Calibration Solutions

ellab
Validation Solutions

High performance calibration systems for professionals

Calibration

A perfect solution for in-house and factory calibrations

In-House Calibration at Your Facility

To ensure accurate measurements it is essential to perform calibrations of probes and sensors on a regular basis. When setting up your own calibration laboratory it is important to use appropriate instrumentation and optimal room facilities.

For temperature calibrations the ValSuite™ Pro calibration and validation software can be integrated with Ellab Dry Blocks, LiquiCal™ baths and the Ellab Temperature Standard (ETS) for a complete and automated calibration. Ellab calibration equipment has a temperature range of -100 °C to +350 °C (optionally to + 700 °C) with accuracy up to ±0.005 °C. The software will auto-ramp the bath/dry block along with verify that your defined stability criteria is met. If necessary, the software is also capable of adjusting your sensors and probes as well.

For pressure transducers, the nVision pressure calibrator together with ValSuite™ software offers manual calibration of TrackSense® Pro sensors as well as E-Val Pro/E-Val Flex sensors with accuracy up to ±0.025% of readings.

For relative humidity sensors, a test kit including saturated LiCl (11.3 RH%) and NaCl (75.3 RH%) solutions together with ValSuite™ software offers manual verification in between regular factory calibrations.

For conductivity sensors, verification concentrations of KOH and NAOH (tablets in distilled water) together with ValSuite™ software offer manual verification/calibration of TrackSense® Pro sensors.

DANAK Accredited Factory Calibration at Ellab

All Ellab validation equipment is factory calibrated at our highly sophisticated laboratories offering optional DANAK accredited calibration services for temperature, pressure and humidity.

The Ellab metrology lab facilities are among the finest in the industry since Ellab believes the starting point for any measurement is to use a reproducible, traceable and highly precise system of standards. This system is implemented in accordance to the EN17025 norm (general requirements for the competence of testing and calibration laboratories). Ellab can assure full confidence in the data generated by the calibration procedure. Ellab is further demonstrating that a prescribed level of technical competence to perform specific calibration activities is achieved through ongoing accreditation by a recognized accreditation (notified) body such as DANAK.

The overall result is assurance that our laboratory is capable of producing data that is accurate, traceable and reproducible. At the same time our ISO 9001 quality management system is aimed at improving our ability to consistently produce valid results. Certificates issued from the accredited calibration will include a complete uncertainty budget for evaluation.

Ellab is determined to offer easy and available calibration services and has throughout recent years established calibration laboratories at a number of Ellab distributors and subsidiaries.

Software Platforms

For trouble free operation the ValSuite™ and ETS Suite software are available offering safe, intuitive and easy execution of the pre-defined operation procedures (all of which are FDA 21 CFR Part 11 compliant).

ValSuite™ Pro - Ellab's highly sophisticated and very advanced validation software package with integrated calibration functionality offers manual, semi-automatic and full-automatic calibration of the Ellab temperature probes and sensors. The ValSuite™ software documents and guides you through the complete calibration process. The database structure in the software enables complete documentation and procedural control for the operators. Templates allow detailed test criteria to be pre-set by the assigned administrator. This ensures accurate documentation and correct implementation of required procedures for consistently repeated tests.

Once programmed and saved as template(s), workload is reduced immensely resulting in huge time savings. Using the intuitive menu, all data necessary for software calibration is processed. Offset values are generated and stored in the software. For TrackSense® Pro wireless loggers and E-Val Pro / E-Val Flex intelligent cable probes a factory calibration routine is recommended on a regular basis, and user alerts can be programmed into the memory for smart handling.

ETS Suite - Ellab offers an easy to use software to run one or multiple ETS units for manual calibration of external temperature probes. ETS Suite can be used to run reference standard comparisons if multiple ETS units are being used. It can also be used to calibrate built-in sensors (i.e. control sensors in an autoclave).

Customized "turn-key" Thermal Validation Solutions

Software platform for full integration of hardware

ValSuite™ Pro

Calibration

ValSuite™ Pro and Plus software allow for manual, semi-automatic or full-automatic pre and post calibrations of probes ensuring consistency, efficiency and proper documentation. Using the intuitive menus all data necessary for calibration is processed, generating offset values that are stored in the probes or software database.

Calibration Set-up

The ValSuite™ Pro software, in combination with the ETS, LiquiCal™ baths or Dry Blocks provide an automatic set-up, which simplifies the calibration routine eliminating errors and saving time. Ellab calibration and validation software uses a point-to-point method and can handle multiple points using interpolation.

When choosing semi-automatic calibration, an ETS is to be connected to the PC. During full-automatic calibrations, both the ETS and LiquiCal™ bath or Ellab Dry Block are controlled.

Advanced software allows for automatic execution saving time

The following performance criteria can be set:

• Maximum allowed fluctuation/time for LiquiCal™ baths and Ellab Dry Block.
• Holding time.
• Maximum allowed fluctuation for ETS.
• Maximum sensor temperature deviation and pass time.

All set-up conditions and acceptance criteria can be stored as templates and are shown together with actual values and deviations in the calibration report.

Equipment Management Tools

ValSuite™ Pro also offers two different calibration management tools:

• Temperature Standard Manager (TSM).
• Sensor Adjustment Manager (SAM).

Based on a database, TSM keeps track of used equipment in your calibration routines i.e. instrument type, serial number, manufacturer, calibration date, calibration expiry and certificate number. SAM provides complementary information on previously calibrated E-Val Pro/ E-Val Flex probes and TrackSense® Pro sensors. A calibration report is automatically generated which shows overall calibration results. The found offset values are linked directly to the ID number of sensor/ probe and will be taken into account whenever the sensor is used in future measurements. All data is transferred and displayed in the calibration report.

Calibration Report.
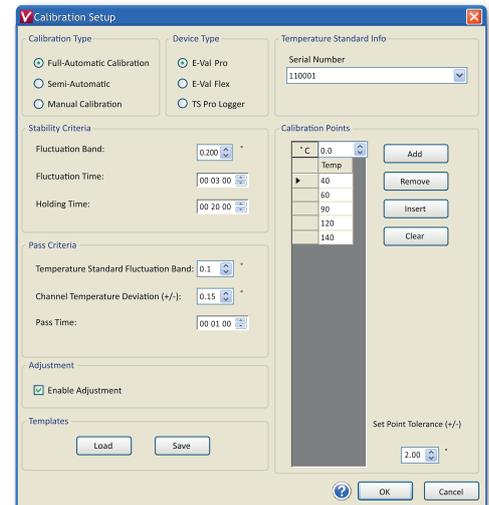
Calibration Set-up

Ellab Reference and Verification Instruments

Temperature Reference Instrument

It is recommended that a reference instrument that is traceable to an accredited body such as SP or NLP in Europe or NIST in the US is used.

The ETS is a robust , completely self-contained measurement system with integrated but also separated electronics for calibration and temperature A/D conversions which allows for extremely accurate temperature calibrations.

Working as a secondary standard, the ETS is available in 3 different versions and comes with an accredited calibration certificate. Furthermore, an optional ETS display unit for stand-alone use is available.

Ellab Temperature Standard with Display

Conductivity Verification Instrument

Using different standard solutions with defined concentrations it is possible to perform manual verification of conductivity sensors. After an initial rinse in carbon dioxide-free distilled water the sensor is placed in the standard solution(s) defined by the pharmacopeia or from certified producer. Avoiding air in the cell during this method provides accurate measurements but a regular factory calibration is highly recommended.

Pressure Reference Instrument

nVision Pressure Calibrator is an intrinsically safe, handheld device for generating and recording pressure up to 8 Bar. The device is portable enough to complete pressure calibrations anywhere. Readings have an accuracy up to ±0.025% and are fully temperature compensated, requiring no additional accuracy offsets for operating temperatures between -20 °C to +50 °C.

The unit includes a calibration certificate with test data at 5 different temperatures and the system is delivered with a pump, connection fittings and adaptors for Ellab pressure sensors. An aluminum protection suitcase is also supplied.

Pressure and Relative Humidity Reference Instruments

Relative Humidity Verification Instrument

A Relative Humidity test kit is a unique solution for verification of relative humidity sensors in between regular factory calibrations to ensure correct relative humidity readings, but does not replace important factory calibrations. The kit consists of a container with saturated LiCl solution providing 11,3% RH and a container with saturated NaCl providing 75,3% RH. Both containers are specially designed with double walls and the saturated salt solution (NaCl or LiCl) is located between these walls whereby the water vapor penetrates through the diaphragm into the inner part of the container where it contacts the sensor. Minimum sensor exposure time: 16-24 hours at constant ambient temperature (±1 °C).

	ETS10	ETS20	ETS25
Temperature range °C:	-80 °C to +250 °C	-50 °C to +150 °C	-196 °C to 420 °C
Accuracy -50°C to +150°C:	±0.015 °C	±0.020 °C	±0.025 °C
Accuracy other temperatures:	±0.025 °C	-	±0.025 °C
Type of sensor:		PT100	
Dimension of Sensor:		ø6.35 x 300mm	

LiquiCal™

LiquiCal™ Solutions

LiquiCal™ is a range of high performance liquid baths used for high precision temperature calibrations. The baths can be controlled via the ValSuite™ software allowing for an automated calibration and ramp control. It can also be used as a stand-alone unit. LiquiCal™ provides high temperature stability along with a large immersion depth, fast temperature change and quiet run.

LiquiCal™ Features

The models cover temperatures from -80 °C to 300 °C. The LiquiCal™ LL, SL and HL all have the same exterior dimensions, bath openings and liquid filling volume. The LiquiCal™ SM/HM micro baths are smaller in size facilitating mobility. On the LiquiCal™ LL, SL and HL baths a convenient overflow reservoir captures any excess fluid that results from fluid expansion.The bath's 15.9 L (4.2 gallon) tank can easily be emptied by drain when needed. Also convenient fixtures to hold either probes or loggers are available.

Liquids for LiquiCal™ Baths

To obtain optimal temperature stability and homogeniety in the calibration zone, liquids with the lowest possible viscosity (<25 CST) are preferred. Ellab supplies a range of liquids in 3.8 L (1 gallon) containers covering the temperature range of -90 °C to +300 °C safely.

Type	Temperature Range
Ellab Halocarbon Oil Low	- 90 °C to +90 °C
Ellab Low Temperature Liquid	- 80 °C to +5 °C
Ellab Standard Oil	- 30 °C to +160 °C
Ellab High Temperature Oil	+80 °C to +300 °C

LiquiCal™ Accessories
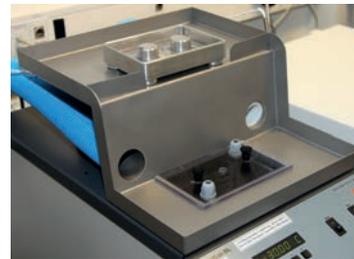
Drip Tray and Exhaust System
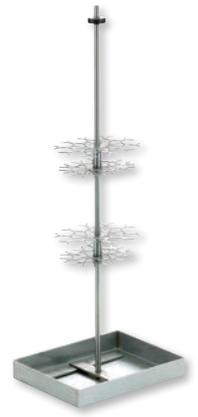
Logger Fixture

Bath overview to make choice easy

	LiquiCal™ LL	LiquiCal™ SL	LiquiCal™ HL	LiquiCal™ SM	LiquiCal™ HM
Type			Liquid bath		
Range	-80 °C to +110 °C	-45 °C to +150 °C	+35 °C to +300 °C	-20 °C to +140 °C	+35 °C to +200 °C
Environmental			+5 °C to +45 °C / 0-90% RH		
Stability	±0.005 °C	±0.005 °C	±0.007 °C	±0.04 °C	±0.02 °C
Display Resolution			0.01 °C		
Access Opening	119 x 172 mm	119 x 172 mm	119 x 172 mm	ø48 mm	ø48 mm
Tank capacity	15.9 L	15.9 L	15.9 L	1.0 L	0.75 L
Heating power	700 W	700 W	700 W/900 W*	130 W	225 W
Cooling time (25 °C to min.)	Max. 3.5 hours	Max. 2 hours	-	45 minutes	-
Communication			RS232		
Power			115 V / 60 Hz or 230 V / 50 Hz		

Booster

Dry Block Solutions

When a calibration at low and high temperatures is required, or when mobility is needed, a transportable Ellab Dry Block system is available. The high stability throughout the entire calibration zone is achieved by using an advanced and intuitive menu-driven controller with an easy to read color display. The Dry Blocks also incorporate a dual-zone heating technology where each heating zone is individually controlled to compensate for possible head loss over the top. Additionally, a line of custom made inserts that consist of wells that fit Ellab sensors/probes perfectly are available.

Main features are:

- Temperature range: -100 °C to +350 °C (optional to +700 °C)
- Unique active dual-zone block ensures perfect temperature homogeneity in the insert
- USB communication
- High speed heating and cooling times
- Easy-to-read color VGA display with perfect overview of the actual calibration status
- Quiet operation

Dry Block Accessories

Logger Holder

Plug and Insert

	PTC 155A	PTC 350A	RTC 156A	RTC159A
Type		Dry Block		
Range	-25 °C to +155 °C	+33 °C to +350 °C	-30 °C to +155 °C	-100 °C to +155 °C
Environmental		0 to +40 °C / 0-90% RH		
Stability	±0.01 °C	±0.02 °C	±0.005 °C	±0.03 °C
Display Resolution	1°C / 0.1°C / 0.01 °C		1°C / 0.1°C / 0.01°C / 0.001 °C	
Insert Dimension	25.8 x 150 mm		29.7 x 150 mm	
Insert Capacity		18-24 sensors + ETS		
Heating time (min to max)	16 min	7 min	19 min	26 min
Cooling time (max to min)	25 min	24 min	37 min	175 min*
Communication		USB 2.0		
Power		115 - 230 V / 50 - 60 Hz		

65 minutes from ambient to -80 °C

Ellab

For over 65 years Ellab A/S has been a leading manufacturer of process validation and monitoring systems used in the food, medical device and pharmaceutical industries.

Calibration Certifications and Service
Ellab maintains a complete calibration facility for annual certifications and service. Ellab A/S temperature, resistance, pressure and humidity calibration laboratory is accredited according to ISO 17025 by DANAK under registration no. 520. Service and maintenance contracts are available.

Rental & Demos
Demo systems are available for trial and rental. Please contact your local Ellab representative for details.

Training
Ellab Academy offers regular training courses for end-users. On-site individual training and equipment installations are also available through Ellab. Our Validation Consultants are available to assist you with IQ, OQ, and PQ procedures.

Validation Solutions