

Fact sheet of the interlaboratory comparison:

Calibration of temperature measurement system – 2024-2025_v1

1. Context and objectives:

In 2024/2025, CT2M organizes a european-wide interlaboratory comparison on temperature measurement system calibration. You are a calibration laboratory (accredited or not) or a test laboratory performing its own calibration, this interlaboratory comparison is organized for you.

The objectives of this proficiency testing are:

- Evaluate the performance of the participants to achieve calibration of temperature measurement system,
- Identify problems in the participating laboratories that may relate to, for example, their operating procedures, the effectiveness of staff training and supervision, inadequate calibration of equipment,
- Improve customer confidence of participants,
- Identify differences between participants.

2. Proficiency testing item:

The temperature measurement system to be calibrated consists of the following components:

- ✓ One Pt100 probe Ø6*100mm with silicone cable length 2m
- ✓ One Delta Ohm HD 2107.1 temperature indicator with 0.01°C resolution

The instrument is calibrated at the beginning and end of the round by a reference laboratory, whose best calibration uncertainty is 0.03°C (expanded uncertainty at k=2).

The metrological traceability of the reference value is guaranteed by the accreditation according to ISO 17025 of the reference laboratory.

3. Calibration Method:

The calibration method to be preferred is the method compared to a standard instrument. The number of comparisons is left to the discretion of the participant. They must use their routine operating procedure and their own means of calibration (standard instrument, comparison medium).

The temperature instrument can be calibrated on the following points:

-20°C, 5°C, 25°C, 35°C, 60°C and 105°C

However, it is not mandatory to perform all calibration points if the means implemented by the participants do not allow it. In addition, any laboratory may participate, regardless of its uncertainty.

A detailed protocol will be provided to each participant at the beginning of the campaign.

4. Organization of the proficiency testing:

Each participant will have to calibrate the temperature measurement system within one week (France round) or two weeks (international round). The instrument will circulate successively from one participant to the other, according to a schedule that takes into account the unavailability of each participant.

The CT2M will provide the participants with an Excel form to use to register its results. For each calibration point, the participants must indicate at least the following results:

- ✓ Standard temperature (T_{std}),
- ✓ Temperature of the temperature measurement system to calibrate (T_{mes}),
- ✓ Correction ($T_{std} - T_{mes}$),
- ✓ Expanded ($k=2$) uncertainty, if determined.

Further information will be provided by the participants on the results file (on the method and the implemented means).

5. Participation fees (*): 590 € net total

(*) This price includes loan of instruments to be calibrated, transport costs to the first participating laboratory, supply of the results file to be completed, any interim reports and the final report containing the results.

For participants located in the European Union, the transport cost of the proficiency testing item(s) to the next participant will be borne by the participant, who is free to choose the carrier. For the participants located outside the European Union, the transport to and from of proficiency testing item(s) must be organised and paid for by the participant.

Option: 150 € net total (in addition to the participation fee)

In addition to the final report, we offer you the option of receiving a personalized individual report incorporating only your performance evaluation.

6. Assigned values and evaluation of performance:

The objectives of the performance evaluation of this inter-laboratory comparison are:

- The evaluation of the ability of each participant to obtain results in agreement with the results of all the participants (z-score or z'-score depending on the number of participants),
- The evaluation of the ability of each participant to obtain results close to an independent reference value taking into account the claimed expanded uncertainty (E_n score).

Two assigned values will therefore be established to meet each of these objectives:

- The robust average of the participants' results determined from the A algorithm defined in ISO 13528.
- The "reference value" determined from the reference laboratory results.

The standard deviation for proficiency assessment and the uncertainties of the assigned values will be determined in order to establish all the performance scores.

7. **Report(s):**

At the end of the round, a statistical analysis will be performed, and a final report will be sent to the participants. This report will contain the results of all the participants (rendered with a codification to respect anonymity), the detection of outliers, the assigned values and their uncertainties, the performance scores of the participants and all other elements useful for the interpretation.

The final report will be distributed to all participants.

Intermediate reports may be provided as the round is progressing, if the round period is longer than 6 months.

8. **Provisional schedule:**

Key steps	Estimated deadline
End of registration	July, the 12 th 2024
Round planning	August 2024
Sending the detailed protocol and the results form	August 2024
Launch of the round	September 2024
Sending of interim report (if the round is longer than 6 months)	March 2025
Publication of the final report	Depending on the number of participants

9. **Reciprocal commitments:**

CT2M commitments:

The CT2M undertakes to:

- guarantee the confidentiality of participants results and respect their anonymity (*),
- carrying out the performance evaluation in complete impartiality,
- organize and process the results in accordance with the reference applicable documents (ISO 17043, ISO 13528).

(*) The data obtained and generated during the inter-laboratory comparison may be consulted during internal or external audits. Auditors are systematically subject to a confidentiality agreement. For communication purposes (conferences, articles, etc.), the results may be used but in a totally anonymous manner. The transport of the test item from one participant to another necessarily entails the partial loss of anonymity

concerning the identity of the previous participant and the following participant. Registration for this inter-laboratory comparison implies acceptance of this condition.

Participant commitments:

The participants in this inter-laboratory comparison undertake to:

- respect the protocol provided for carrying out calibrations,
- provide their results within the deadlines defined by the organizer,
- not to communicate with any other participant who may be known in order to avoid any risk of collusion,
- transmit all the necessary information of the successful completion of the inter-laboratory comparison to all the persons concerned within their laboratory,
- inform the CT2M of any malfunction.

10. Registration and contact:

If you are interested in participating in this inter-laboratory comparison, please complete the registration form (<https://forms.office.com/e/Vc6qebck2j>).

For further information please contact us by:

- ✓ Email: ciltemperature@ct2m.fr
- ✓ Phone: +33 (0)4 90 50 90 14

CT2M : FICHE D'INSCRIPTION -
Etalonnage d'une chaîne de mesure de température - 2024-2025



Appendix: Terms of sale

1. Invoicing

Invoicing is carried out after sending the final report or an intermediate report of the proficiency testing. **The settlement is 30 days end of month of the invoice date.**

Every registration fee is due when the campaign is started and won't be cancelled or refund.

2. Loss, degradation or elimination of the test item

In case of loss, damage or elimination of the proficiency test item by a participant, the CT2M reserves the right to claim its amount or purchase and new shipment, to know: 400 €.

The CT2M cannot be held responsible for loss, disposal or non-receipt of the proficiency test item.

3. Number of participants

In case of insufficient number of participants for an appropriate statistical treatment, the CT2M reserves the right to cancel this inter-laboratory comparison.

4. Management and storage of personal data

The CT2M will use the data of the participants in order to communicate with the participant during the the ILC. These datas are also used to send them intermediate and/or final reports. The data may be used for commercial purposes: communication of new features on the website, communication on new ILC or on ILC in which a participant have already participated. The data will be kept for 5 years after the last communication. (The data listed in the quotes and reports are kept for 10 years.)

The provisions governing the management of personal data under the RGPD are available on our website in the "RGPD Policy" document: <https://ct2m.fr/presentation-ct2m/politique-rgpd/>

In the event of refusal, an email should be sent to ct2m@ct2m.fr.