

Fact sheet of the interlaboratory comparison:

ILC DC Power Supply 2025

1. Context and objectives:

In 2025, the CT2M organizes an international inter-laboratory comparison in the field of electricity. This consists of calibrating a DC power supply.

The objectives of this proficiency testing are:

- Evaluate the performance of the participants to achieve the calibration of a DC power supply,
- Monitor the continued performance of the participants to perform a DC power supply calibration,
- 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 client confidence of participants,
- Identify differences between participants,

2. Proficiency testing item:

The power supply to be calibrated is channel 1 of a Rohde&Schwarz HMP2020 power supply, which has the following characteristics:

- Tension 0-32 V
- Current 0-10 A
- Max. Power 160 W



Figure 1 Rohde&Schwarz HMP2020

The programming resolution of the device is :

- Tension 1mV
- Current < 1 A : 0,2 mA ; ≥ 1 A : 1 mA

The indication resolution of the device is:

- Tension 1mV
- Current < 1 A : 0,2 mA ; ≥ 1 A : 1 mA

To ensure its stability, this supply channel will be calibrated at the beginning and end of the circuit by an ISO 17025 accredited laboratory whose best calibration uncertainties are equal to:

- Tension : $3,5 \times 10^{-6} \times U + 0,3 \mu\text{V}$ (uncertainty extended to $k=2$).
- Current : $3,9 \times 10^{-5} \times I + 1,2 \text{ nA}$ (uncertainty extended to $k=2$).

3. Calibration Method:

The participant is free to choose the calibration method, which may be direct or indirect. The participant's routine operating procedure must be used.

The number of repetitions per calibration point is left to the laboratory's choice; its routine operating procedure must be used.

Participants will be asked to measure the error of indication, i.e. the difference between the value read on the power supply and a reference value.

The calibration programme will be as follows:

Direct Current (DC)	
Measured or sought characteristic	Calibration points
Potential difference "open circuit - current close to zero"	0 V, 100 mV, 5 V, 12 V, 30 V
Current intensity "short-circuit - voltage close to zero"	100 mA, 1 A, 9 A

Participants will be asked to perform at least the 0 V point and a voltage or current calibration point.

4. Conditions for participation

The following conditions must be met in order to take part:

- ✓ Possess the resources and facilities needed to carry out the calibrations
- ✓ Provide an uncertainty associated with each result (*)

() If I wish to take part in this CIL and I am unable to provide an uncertainty associated with each result delivered. I can be assisted by the CT2M in estimating my calibration uncertainties as part of this CIL (chargeable service).*

5. Organization of the proficiency testing:

Each participant will have to calibrate the power supply within one week. The power supply will circulate from one participant to another, according to a schedule that considers the unavailability of each participant.

The CT2M will provide participants with an Excel form in which to record their results. For each calibration point, participants must indicate at least the following results:

- ✓ Reference value (V_{ref})
- ✓ Programming value on the power supply (V_{prog})
- ✓ Value read on the power supply ($V_{lecture}$)
- ✓ Output error ($V_{prog} - V_{ref}$)
- ✓ Error of indication ($V_{lecture} - V_{ref}$)
- ✓ Uncertainty on the error of indication extended to $k=2$.

Other information on the method and resources used will be provided by the participants on the results file.

6. Assigned values and evaluation of performance:

The aim of evaluating the performance of this inter-laboratory comparison is to assess the ability of each participant to obtain a calibration result close to the reference value considering their expanded uncertainty ($k=2$).

To meet this objective, a reference value will be established based on the results of the laboratory performing the calibrations for the stability study and the results of the participants that are traceable to the SI (accredited participants).

The performance score used will be the En score, which enables a comparison of the participants' results with a reference value and considering their expanded uncertainties ($k=2$). The rounding rules and acceptance criteria for performance scores are those described in the ISO 13528 and ISO 17043 standards.

The metrological traceability of the reference values is guaranteed by the ISO 17025 accreditation of the laboratory carrying out the calibrations for the stability study and by the accreditation of any participants whose results are taken into account.

7. **Report(s):**

The final report will be distributed to all participants. The final report sent by the CT2M must not be distributed by participants outside their organisation. The information contained in the report may not be used by participants for scientific publications or any other communication medium.

Intermediate reports will also be issued during the circuit, in cases where many participants means that the circuit will last longer than 6 months.

8. Provisional schedule:

Key steps	Estimated deadline
Registration closes	9 May 2025
Detailed protocol and results file sent	6 June 2025
Launch of the circuit	16 June 2025
Final report publication	Depending on the number of participants

9. Price

Participation fees: 650 € net total

This price is independent of the number of calibration points. This price includes the provision of the instrument to be calibrated, the supply of the DC power supply, of the results file to be completed and the participation protocol, transport costs to the circuit launch and the supply of interim and final reports containing the analysis of results and the evaluation of performance.

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

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

In addition to the final report, you have the option of receiving a personalised individual report that includes your performance evaluation only.

10. 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 the 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.

11. Registration and contact:

To take part in the inter-laboratory comparison “ILC 2025 Power Supply”, please complete the registration form “CT2M: REGISTRATION FORM - ILC DC Power Supply 2025” by clicking on the following link: <https://forms.office.com/e/NzeN4dSRHQ> or by scanning the QR Code below:



For further information, please contact us:

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

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.

→ **DC Power Supply HMP2020 : 1538 € HT**

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

3. Number of participants

If number of participants is insufficient 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 ILC. These data 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 event of refusal, an email should be sent to ct2m@ct2m.fr.