

Certificate of Calibration

This certificate provides measurement results that are traceable to the SI (The International System of Units) through internationally recognized standards.

Object	DC current transducer
Manufacturer	Danisense
Type	DS600ID
Identification	186
Serial number	24170022009
Customer	Danisense A/S
Customer address	Malervej 10 DK-2630 Taastrup
Calibration number	2602-A0301-02
Calibration method	A03
Performed by	Morten Birkerod Lillholm
Authorized by	<u>Morten Lillholm</u> Morten Birkerod Lillholm
Date Received	2026-01-06
Date of calibration	2026-01-06
Date of certificate	2026-01-14

The results presented in this report relate only to the items calibrated. This report shall not be reproduced except in full without approval of the laboratory. The laboratory is accredited by DANAK, the national accreditation body in Denmark, according to the requirements in ISO/IEC 17025:2017.

Calibration Details

The measured quantity is current expressed as the deviation (error) between the current indicated (reading) by the device under test (DUT) and the measured reference current. The indicated current is calculated from the secondary output (current or voltage) of the DUT and the nominal transfer ratio of the device, as provided by the customer or the datasheet of the DUT. Results are calculated as the average of multiple measurements.

Quantity	Definition
I_{set}	Expected set current
I_{rdg}	DUT current reading
I_{REF}	Reference current
I_U	Uncertainty in ampere
I_{tol}	Specified tolerance (specification) of error
ϕ_{REF}	Phase of reference current
ϕ_{DUT}	Phase reading of DUT
ϕ_U	Phase uncertainty
f_0	Fundamental test frequency

Comments

(none)

Extent of Calibration

Full scale current: 600.0 A ac rms

Range: [60.0 A rms; 600.0 A rms]

DUT nominal ratio: $A_{primary}/A_{secondary} = 1500.0$

Environment Conditions

Ambient temperature at the time of testing 23 ± 2 °C, relative humidity 45 ± 5 %. The primary current is applied through the center with two symmetric return paths at least 20 cm from the center of the DUT opening.

Uncertainty of Measurement

The uncertainty is based on the expanded uncertainty of measurement. Stated as the combined standard uncertainty multiplied by a coverage factor K=2 (Level of confidence at 95 percent). Multiple measurements are performed at each point and the stability of the measurements is considered in the reported uncertainty. Error bars on graph show confidence interval of measurement points.

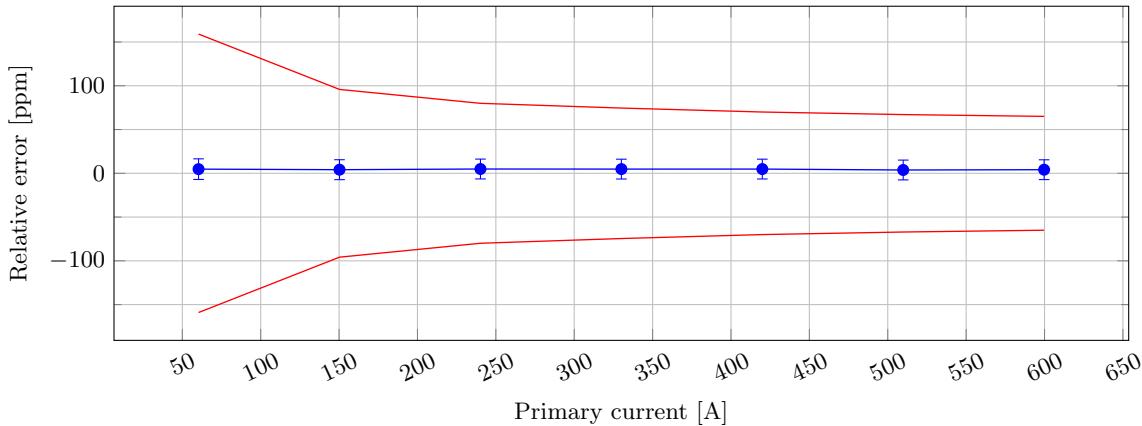
Instruments Used for Calibration

ID	Type	Description	Calibrated
149-AC	DL2000ID	High Precision REF DCCT	2025-07-25
201-AC	1.2510268	1R25	2025-12-04
181	PCR3000WEA2	AC power supply	2024-01-30
228-AC	3458A	8.5 digit multimeter	2026-01-01
189-AC	3458A	8.5 digit multimeter	2026-01-01
200-AC	2.501358985	2R5	2026-01-05

Report generated with software version 1.0.0 using report template 1.0.

AC RMS Relative Current Error

Calculated as the relative difference between the measured AC RMS of the DUT and the measured RMS of the reference current. Measurements cover signal components up to the 10th harmonic of the fundamental frequency f_0 . Values expressed in [ppm] are relative to the measured primary current I_{REF} , using the nominal transfer ratio of the DUT. 1 ppm = 0.0001%.



Set Current	Frequency	REF current	DUT reading	Error current	Uncertainty	Specification	Note
I_{set}	f_0	I_{REF}	I_{rdg}	$\frac{I_{rdg} - I_{REF}}{I_{REF}}$	$\frac{I_U}{I_{REF}}$	I_{tol}	
[A]	[Hz]	[A]	[A]	[ppm]	[ppm]	[ppm]	
60.0	53.00	60.3600	60.3603	5	12	160	*
150.0	53.00	150.277	150.277	4	11	96	*
240.0	53.00	240.188	240.189	5	11	80	*
330.0	53.00	330.083	330.085	5	11	75	*
420.0	53.00	419.975	419.977	5	11	70	*
510.0	53.00	509.862	509.863	4	11	67	*
600.0	53.00	599.747	599.750	4	11	65	*

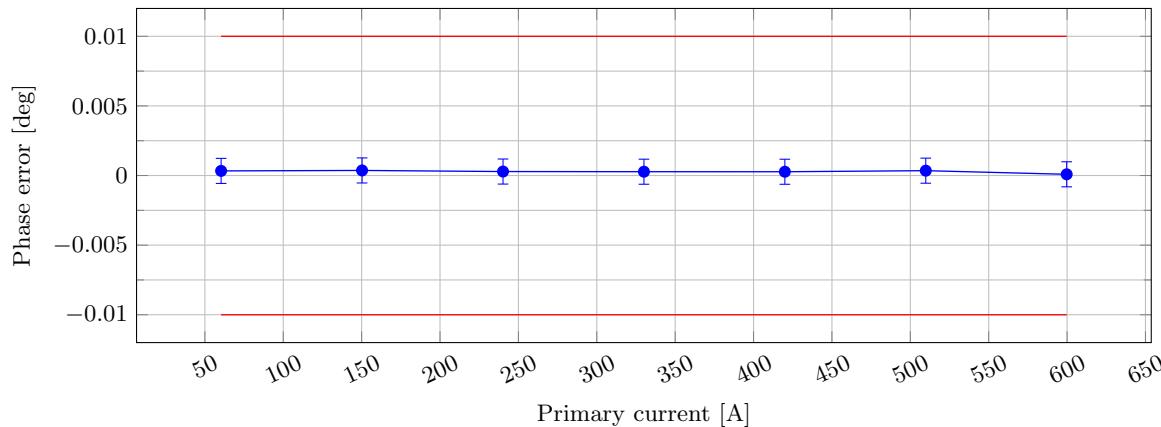
Measurement Notes

Non-binary statement with measurement uncertainty as guard band according to ILAC-G8:09/2019. The result is considered as the total error reported in the above table.

- * Pass: Result is within the specification minus the measurement uncertainty.
- ** Conditional pass: Result is within the specification, but the result plus measurement uncertainty is outside the specification
- *** Conditional fail: Result is outside the specification, but the result minus measurement uncertainty is inside the specification
- **** No statement: Result is inside the specification, but the measurement uncertainty is larger than the specification.
- F Fail: Result minus measurement uncertainty is outside the specification.

AC Phase Error

Calculated as the absolute difference between the measured phase of the DUT and measured phase of the reference current. Values expressed in [deg] are referred to the fundamental frequency f_0 of the reference current.



Set Current I_{set} [A]	Frequency f_0 [Hz]	Phase error $\phi_{DUT} - \phi_{REF}$ [deg]	Specification		
			Uncertainty ϕ_U [deg]	ϕ_{tol} [deg]	Note
60.0	53.00	0.0003	0.0009	0.010	*
150.0	53.00	0.0004	0.0009	0.010	*
240.0	53.00	0.0003	0.0009	0.010	*
330.0	53.00	0.0003	0.0009	0.010	*
420.0	53.00	0.0003	0.0009	0.010	*
510.0	53.00	0.0003	0.0009	0.010	*
600.0	53.00	0.0001	0.0009	0.010	*

Measurement Notes

Non-binary statement with measurement uncertainty as guard band according to ILAC-G8:09/2019. The result is considered as the total error reported in the above table.

- * Pass: Result is within the specification minus the measurement uncertainty.
- ** Conditional pass: Result is within the specification, but the result plus measurement uncertainty is outside the specification
- *** Conditional fail: Result is outside the specification, but the result minus measurement uncertainty is inside the specification
- **** No statement: Result is inside the specification, but the measurement uncertainty is larger than the specification.
- F Fail: Result minus measurement uncertainty is outside the specification.

Terms of Sale and Delivery of Calibration Services**Application**

The general terms of sale and delivery set out below shall apply to all sales and deliveries of Calibration services by DaniSense A/S (the "Seller"), unless otherwise agreed in writing between the Seller and a buyer (separately or collectively referred to as "Party" or "Parties", as the case may be).

Offers

Offers made by the Seller shall be open for acceptance for 30 days from the date of the offer. An offer will always include a sample report for customer acceptance of actual report content, price with INCOTERMS and lead time from receiving part for calibration.

Confidentiality

Danisense Calibration is responsible for the management of all information obtained or created during the performance of laboratory activities. All information shared by buyer is considered confidential information. All results are the property of buyer, and seller has no right to disclose any results to third parties, unless agreed upon by the customer. The measurement results are used by seller for statistical purposes to improve the performance of the calibration lab. Information may be shared with DANAK, the national accreditation body in Denmark without notifying the customer. If for any reason the seller is required by law or special circumstances to disclose any data, the buyer must be informed in a timely manner. If seller is using sub suppliers for any service, these suppliers are informed about the confidentiality required, but seller will try to avoid disclosing any confidential information to suppliers.

Delivery

Unless otherwise agreed between the Parties, the goods shall be delivered Ex Works (Incoterms 2010). Delivery is effected at the buyer's expense and risk.

Disclaimer

The lab is not responsible if information given by the customer alters the validity of the results.