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Data Sheet 10.31/5

HIGHVOLT Calibration Laboratory D-K-19153-01-00

Traceable Calibrations and Calibration Service for HV Measuring Systems

According to standards (e.g. IEC 60060-2) and general metrological principles high-voltage measurements have to be traceable to National Standards. Because of the requirements of appropriate standards and the existence of an Accreditation System in Germany, the first calibration has to be done by an accredited calibration laboratory. The IEC Standards recommend annual performance tests, but require at least one in five years. Therefore since 1999 an accredited Calibration Laboratory was established at HIGHVOLT.

The HIGHVOLT Calibration Laboratory is accredited by Germany's National Accreditation Body (DAkkS – abbreviation of Deutsche Akkreditierungsstelle GmbH) under the registration number D-K-19153-01-00 and fulfills the requirements of the International Standard DIN EN ISO/IEC 17025:2005. The DAkkS is signatory to the multilateral agreements of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates.



Fig. 1 Accreditation Certificate and the English translation (the original is the German version of the Accreditation Certificate)

Accredited calibration laboratories are established to safeguard the metrological infrastructure of a country. They realize most of the routine calibration work for companies and in-house calibration sections. They use industrially manufactured Reference Standards with the best possible metrological properties. The DAkkS laboratories issue calibration certificates with a fixed structure.

Characteristics of the HIGHVOLT Calibration Laboratory D-K-19153-01-00

The following accredited measurement quantities and measurement ranges for measuring systems and components are offered by the Calibration Laboratory:

Device	Quantity	Measuring range	Place of calibration
Instruments, digital analyzers, impulse calibrators	DC \bar{U}	1 V ... 1000 V	at HIGHVOLT
	AC $\hat{U}/\sqrt{2}, U_{\text{eff}}$	1 V ... 700 V, 50 Hz 100 V, 10 Hz ... 500 Hz	
	LI \hat{U}, T_1, T_2	9 V ... 1000 V, 0.84/60 μs , 1.56/60 μs	on-site or at HIGHVOLT
	LIC \hat{U}, T_C	50 V ... 750 V, $T_C = 0.5 \mu\text{s} \dots 6 \mu\text{s}$	
	SI \hat{U}, T_2, T_P	9 V ... 850 V, 250/2500 μs , 20/4000 μs	
	Step U	9 V ... 330 V	
Measuring systems Measuring dividers	DC \bar{U}	1 kV ... 600 kV, linearity test up to 2000 kV (on-site up to 1500 kV)	on-site or at HIGHVOLT
	AC $\hat{U}/\sqrt{2}, U_{\text{eff}}$	1 kV ... 800 kV (on-site up to 200 kV) linearity test up to 1800 kV (on-site up to 1000 kV)	
	LI \hat{U}, T_1, T_2	10 kV ... 700 kV, linearity test up to 3500 kV	
	LIC \hat{U}, T_C	180 kV ... 600 kV, $T_C = 0.5 \mu\text{s} \dots 6 \mu\text{s}$	
	SI \hat{U}, T_P, T_2	50 kV ... 500 kV, linearity test up to 2500 kV	
Capacitors	C	10 pF ... 10 nF, 5 kV ... 800 kV/50 Hz $1 \cdot 10^{-5} \dots 1 \cdot 10^{-2}$	on-site or at HIGHVOLT
C/tan δ -measuring devices	$\tan \delta$	10 pF ... 10 nF, 5 kV ... 100 kV/50 Hz $1 \cdot 10^{-5} \dots 1 \cdot 10^{-2}$	
Shunts	IC I, T_1, T_2	200 A ... 40 kA, 8/20 μs	
current sensors	IC I, T_1, T_2	200 A ... 200 kA, 8/20 μs	
Loss measuring systems	AC U_{eff}	40 V ... 100 kV, 50/60 Hz	
	AC I_{eff}	0.4 A ... 2000 A, 50/60 Hz	
	AC P	16 W ... 200 MW	
	AC Q	16 var ... 200 Mvar	
	AC S	16 VA ... 200 MVA	

Abbreviations:

DC:	direct voltage	T_1 :	front time
AC:	alternating voltage	T_2 :	time to half value
LI:	full lightning impulse voltage	T_C :	time to chop at LIC
LIC:	chopped lightning impulse voltage	T_P :	time to peak
SI:	switching impulse voltage		

The detailed accreditation certificate and accredited best measurement capabilities are listed also on the [DAkKS](#) homepage.

Calibration procedures

- Component calibration (peak voltmeters, capacitors, dividers, current monitors etc.)
- System calibrations
- Linearity check
- Performance check

Place of calibration

The calibration is offered

- at the laboratory in Dresden or
- as on-site calibration.

Calibration Certificates

The laboratory issues German or English DAkkS calibration certificates.

These calibration certificates document the traceability to national standards, which realize the units of measurements according to the International System of Units (SI). The calibration certificates contain detailed information about the calibration object, the calibration procedure, measuring conditions, measuring results and uncertainty of measurement. Additionally the certificates may contain a conformity declaration concerning an appropriate standard if the conformity was proved by measurements. The certificates are valid for the moment and for the conditions of the calibration. The user is obliged to have the object recalibrated at appropriate intervals.

How to get a calibration

Enquiry

A qualified enquiry should be the basis for the choice of the equipment and estimation of the content of calibration. The Calibration questionnaire (see document No. 10.101) may be helpful to fix the calibration task.

Calibration offer

After the check of the task under consideration of the possibilities of the laboratory and the content of accreditation the customer gets a calibration offer containing the program of the calibration and all necessary technical and commercial conditions. In the case of technically unclear situations the task first will be discussed with the customer.

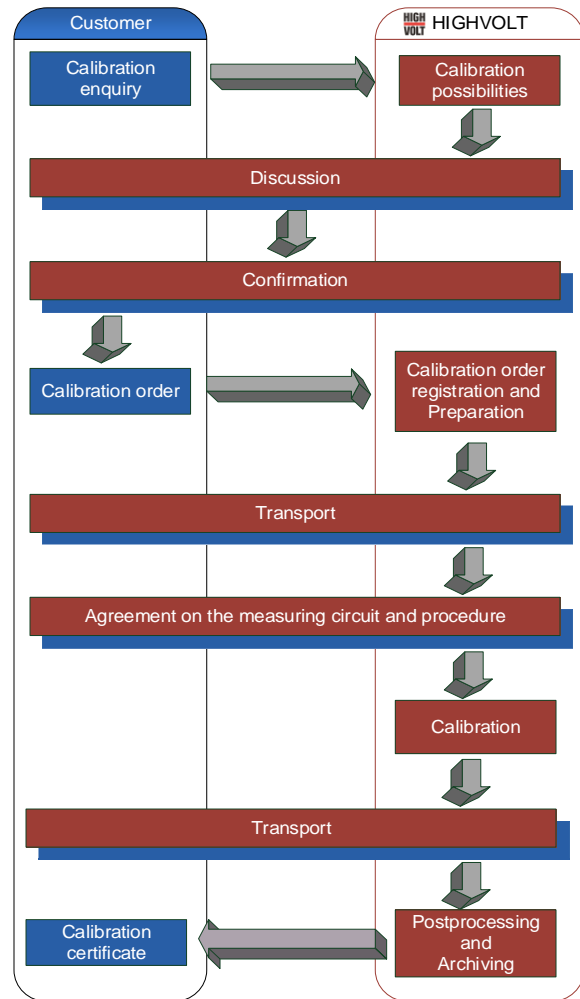


Fig. 2: Procedure of a calibration

For further information please contact:

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