



Accreditation number **SCS 056**
Numero d'accreditamento

SCS Directory Registro SCS

Accreditation Standard ISO/IEC 17025:2005
Norma d'accreditamento ISO/IEC

page/pagina 1 of/di 6

Calibration laboratory for electrical quantities

TESEQ AG
Nordstrasse 11 F
CH-4542 Luterbach

+41 32 / 681 40 40
Fax +41 32 / 681 40 48

<http://www.teseq.com>

mailto: stefan.studer@teseq.com

Head of laboratory : Stefan Studer
Deputy : Roman Salzmann
Responsible for QA : Eric Dudenhoeffer
First accreditation : 28.02.1995
Last accreditation : 20.12.2005
Current edition : www.sas.ch

Measured quantities:

Electrostatic Discharge Generators
Electrical Fast Transient / Burst Generators
Surge Generators
PQT Dropout / Variation Generators
Direct Continuous Voltage / Current
Resistance
Alternating Voltage / Current
Automotive Generators

Mutations:

Personnel 01.11.96, 01.04.99
16.01.08
Extensions 15.06.97, 01.12.05
15.07.08
Address 27.11.06
Edition **SCS056/S**

The given extended measurement uncertainty is the standard uncertainty of the measurement multiplied by an extension factor $k = 2$, which corresponds to a confidence level of about 95% for a normal distribution.
L'incertezza di misura estesa indicata è l'incertezza tipo della misurazione moltiplicata per il fattore di allargamento $k = 2$, il quale, per una distribuzione normale, corrisponde al livello di fiducia del 95% circa

Measured Quantity Instrument or Gauge	Measurement Range	Measurement Conditions at 23 °C	Best Measurement Capability ±	Remarks
Electrostatic discharge (ESD) Generators				
Pulse current				
Peak	1 A ... 140 A		6 %	Calibration of ESD Generators according to IEC 61000-4-2; 2008 ISO 10605; 2008
Decay points	1 A ... 140 A	At 30 ns 65 / 180 / 400 ns At 60 ns 130 / 360 / 800 ns	8 % + (8 %)* 8 % + (16 %)*	
			(%)* Reproducibility device setup	
Rise time	400 ps ... 1 µs		95 ps	



Accreditation number **SCS 056**
Numero d'accreditamento

SCS Directory Registro SCS

Accreditation Standard ISO/IEC 17025:2005
Norma d'accreditamento ISO/IEC

page/pagina 2 of/di 6

Calibration laboratory for electrical quantities

Measured Quantity Instrument or Gauge	Measurement Range	Measurement Conditions at 23 °C	Best Measurement Capability ±	Remarks
Direct continuous high voltage	100 V ... 30 kV		400•10 ⁻⁶	
Burst Generators				
Pulse voltage	100 V ... 4 kV 200 V ... 8 kV	Into 50 Ω Into 1000 Ω	3 % 3,5 %	Calibration of Burst Generators according to IEC 61000-4-4; 2004
Pulse width and Repetition	1 ns ... 10 μs		2,5 %	
Rise time	1 ns ... 1 μs		2,5 %	
Pulse frequency		Pulse frequency:		
Burst length / Repetition	0,5 ms ... 500 ms	1 kHz ... 2 MHz	1 %	
Surge Generators				
Pulse voltage	100 V ... 10 kV 50 V ... 7 kV	Asymmetric Symetric	2 % 2 %	Calibration of Surge Generators according to IEC 61000-4-5; 2005
Pulse current	50 A ... 5 kA		2 %	
Rise time and pulse width	400 ns ... 1 ms		2,5 %	



Accreditation number **SCS 056**
Numero d'accREDITAMENTO

SCS Directory Registro SCS

Accreditation Standard ISO/IEC 17025:2005
Norma d'accREDITAMENTO ISO/IEC

page/pagina 3 of/di 6

Calibration laboratory for electrical quantities

Measured Quantity Instrument or Gauge	Measurement Range	Measurement Conditions at 23 °C	Best Measurement Capability ±	Remarks
Automotive Generators				Calibration of Automotive Generators according to ISO 7637-2 (2004)
Burst pulse				
Pulse voltage	25 V ... 1000 V	Into 50 Ohm	2.4 %	
Risetime and pulsewidth	2 ns ... 1 µs		1.7 %	
Pulse voltage	50 V ... 1500 V	Into 1000 Ohm	3.4 %	
Risetime	2 ns ... 1 µs		1.7 %	
Pulsewidth	2 ns ... 1 µs		1.7 %	
Surge pulse				
Pulse voltage	10 V ... 1000 V	Open circuit	1.7 %	
	5 V ... 500 V	with Load RL = Ri	2.1 %	
Risetime and pulsewidth	100 ns ... 10 s		1.1 %	
Load dump pulse				
Pulse voltage	10 V ... 1000 V	Open circuit	1.7 %	
	5 V ... 500 V	with Load RL = Ri	2 %	
Risetime and pulsewidth	100 ns ... 10 s		1.1 %	



Accreditation number **SCS 056**
Numero d'accREDITAMENTO

SCS Directory Registro SCS

Accreditation Standard ISO/IEC 17025:2005
Norma d'accREDITAMENTO ISO/IEC

page/pagina 4 of/di 6

Calibration laboratory for electrical quantities

Measured Quantity Instrument or Gauge	Measurement Range	Measurement Conditions at 23 °C	Best Measurement Capability ±	Remarks
Automotive Generators				Calibration of Automotive Generators according to ISO 7637-2 (2004)
Voltage variation				
Direct continuous voltage	0.1 V ... 100 V		1.6 %	
Pulse width	100 ns ... 10 s		1 %	
Overshoot	0.1 V ... 100 V		2.4 %	
Inrush current pulse	1 ms ... 10 s	2 ... 300 A	1.7 %	
Dropout and variation Generators				Calibration of Dropout / Variation Generators according to IEC 61000-4-11; 2004
Voltage	1,2 V ... < 12 V 12 V ... < 120 V 120 V ... 700 V	45 Hz ... 1 kHz 45 Hz ... 1 kHz 45 Hz ... 1 kHz	85•10 ⁻⁶ + 240 μV 235•10 ⁻⁶ + 6,5 mV 465•10 ⁻⁶ + 56 mV	
Inrush current	1 A ... 500 A		2 %	
Rise time / Fall time	400 ns ... 1 ms		2 %	
Timing Parameters	100 ns ... 15 s		0,3 %	
Phase angle	0° ... 360°	50 Hz ... 60 Hz	1,5°	



Accreditation number **SCS 056**
Numero d'accreditamento

SCS Directory Registro SCS

Accreditation Standard ISO/IEC 17025:2005
Norma d'accreditamento ISO/IEC

page/pagina 5 of/di 6

Calibration laboratory for electrical quantities

Measured Quantity Instrument or Gauge	Measurement Range	Measurement Conditions at 23 °C	Best Measurement Capability ±	Remarks
Direct continuous voltage Calibration of voltage sources	10 mV ... < 120 mV 120 mV ... < 1,2 V 1,2 V ... < 12 V 12 V ... < 120 V 120 V ... 1000 V		11•10 ⁻⁶ + 1,1 μV 10•10 ⁻⁶ + 4,1 μV 10•10 ⁻⁶ + 30 μV 12•10 ⁻⁶ + 405 μV 11•10 ⁻⁶ + 6 mV	
Direct continuous current Calibration of current sources	10 nA ... < 120 nA 120 nA ... < 1,2 μA 1,2 μA ... < 12 μA 12 μA ... < 120 μA 120 μA ... < 1,2 mA 1,2 mA ... < 12 mA 12 mA ... < 120 mA 120 mA ... 1,05 A 1 A ... 300 A		35•10 ⁻⁶ + 10 nA 25•10 ⁻⁶ + 10 nA 25•10 ⁻⁶ + 10 nA 25•10 ⁻⁶ + 10 nA 25•10 ⁻⁶ + 50 nA 25•10 ⁻⁶ + 120 nA 45•10 ⁻⁶ + 5 μA 130•10 ⁻⁶ + 75 μA 1.5 %	With current probe
Resistance Calibration of resistances	1 Ω ... < 12 Ω 12 Ω ... < 120 Ω 120 Ω ... < 1,2 kΩ 1,2 kΩ ... < 12 kΩ 12 kΩ ... < 120 kΩ 120 kΩ ... < 1,2 MΩ 1,2 MΩ ... < 12 MΩ 12 MΩ ... < 120 MΩ 120 MΩ ... 1,2 GΩ		20•10 ⁻⁶ + 80 μΩ 14•10 ⁻⁶ + 1,2 mΩ 12•10 ⁻⁶ + 5 mΩ 12•10 ⁻⁶ + 30 mΩ 12•10 ⁻⁶ + 500 mΩ 18•10 ⁻⁶ + 5 Ω 60•10 ⁻⁶ + 160 Ω 580•10 ⁻⁶ + 4,2 kΩ 5,8•10 ⁻³ + 2 MΩ	4-wire measurement
Alternatic voltage Calibration of voltage sources	2 mV ... < 12 mV 12 mV ... < 120 mV 120 mV ... < 1,2 V 1,2 V ... < 12 V 12 V ... < 120 V 120 V ... 700 V	40 Hz ... 1 kHz 40 Hz ... 1 kHz 40 Hz ... 1 kHz 40 Hz ... 1 kHz 40 Hz ... 1 kHz 40 Hz ... 1 kHz	235•10 ⁻⁶ + 6 μV 85•10 ⁻⁶ + 20 μV 85•10 ⁻⁶ + 60 μV 85•10 ⁻⁶ + 240 μV 235•10 ⁻⁶ + 6,5 mV 465•10 ⁻⁶ + 56 mV	



Accreditation number **SCS 056**
Numero d'accreditamento

SCS Directory Registro SCS

Accreditation Standard ISO/IEC 17025:2005
Norma d'accreditamento ISO/IEC

page/pagina 6 of/di 6

Calibration laboratory for electrical quantities

Measured Quantity Instrument or Gauge	Measurement Range	Measurement Conditions at 23 °C	Best Measurement Capability ±	Remarks
Alternatic voltage Calibration of voltage sources	2 mV ... < 12 mV	1 kHz ... 100 kHz	$600 \cdot 10^{-3} + 30 \mu\text{V}$	
	12 mV ... < 120 mV	1 kHz ... 100 kHz	$100 \cdot 10^{-3} + 60 \mu\text{V}$	
	120 mV ... < 1,2 V	1 kHz ... 100 kHz	$100 \cdot 10^{-3} + 200 \mu\text{V}$	
	1,2 V ... < 12 V	1 kHz ... 100 kHz	$100 \cdot 10^{-3} + 1.42 \text{ mV}$	
	12 V ... < 120 V	1 kHz ... 100 kHz	$200 \cdot 10^{-3} + 4,4 \text{ mV}$	
	120 V ... 700 V	1 kHz ... 100 kHz	$400 \cdot 10^{-3} + 29 \text{ mV}$	
	12 mV ... < 120 mV	100 kHz ... 300 kHz	$400 \cdot 10^{-3} + 100 \mu\text{V}$	
	120 mV ... < 1,2 V	100 kHz ... 300 kHz	$400 \cdot 10^{-3} + 490 \mu\text{V}$	
	1,2 V ... < 12 V	100 kHz ... 300 kHz	$400 \cdot 10^{-3} + 3.88 \text{ mV}$	
	12 V ... < 120 V	100 kHz ... 300 kHz	$500 \cdot 10^{-3} + 61,2 \text{ mV}$	
	120 mV ... < 1,2 V	300 kHz ... 1 MHz	$1.2 + 330 \mu\text{V}$	
	1,2 V ... < 12 V	300 kHz ... 1 MHz	$1.2 + 17.04 \text{ mV}$	
Alternatic voltage	100 V ... 10 kV	50 Hz ... 60 Hz	1.5 %	
Frequency	1 Hz ... 40 Hz		0.07 %	
	40 Hz ... 10 MHz		0.03 %	
Alternatic current Calibration of current sources	10 μA ... < 120 μA	45 Hz ... 100 Hz	$695 \cdot 10^{-6} + 35 \text{ nA}$	
	120 μA ... < 1,2 mA	45 Hz ... 100 Hz	$695 \cdot 10^{-6} + 350 \text{ nA}$	
	1,2 mA ... < 12 mA	45 Hz ... 100 Hz	$695 \cdot 10^{-6} + 3,1 \mu\text{A}$	
	12 mA ... < 120 mA	45 Hz ... 100 Hz	$695 \cdot 10^{-6} + 30 \mu\text{A}$	
	120 mA ... 1,05 A	45 Hz ... 100 Hz	$925 \cdot 10^{-6} + 380 \mu\text{A}$	
	400 mA ... < 2,4 A	40 Hz ... 1 kHz	$500 \cdot 10^{-6} + 0,25 \text{ mA}$	
	2,4 A ... 40 A	40 Hz ... 1 kHz	$600 \cdot 10^{-6}$	

The parts of the uncertainty without dimension specified are relative values, referring to the measured value.