



## SCS Directory

Accreditation number: SCS 0042

International standard: ISO/IEC 17025:2017  
Swiss standard: SN EN ISO/IEC 17025:2018

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Scope of accreditation see: [www.sas.admin.ch](http://www.sas.admin.ch)  
(Accredited bodies)

### Scope of accreditation as of 25.08.2023

#### Calibration laboratory for electrical quantities

##### Calibration and Measurement Capability (CMC)

Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks
DC voltage	3 $\mu$ V ... < 100 mV		$6 \cdot 10^{-6} U + 1 \mu$ V	> 1000 V see high voltage calibration on site possible
Calibration of voltage calibrators	100 mV ... < 1 V		$5 \cdot 10^{-6} U + 1 \mu$ V	U=measured value
	1 V ... < 10 V		$5 \cdot 10^{-6} U + 1 \mu$ V	
	10 V ... < 100 V		$7 \cdot 10^{-6} U + 65 \mu$ V	
	100 V ... 1000 V		$7 \cdot 10^{-6} U + 265 \mu$ V	
Calibration of voltage measurement instruments	3 $\mu$ V ... < 20 mV		$7 \cdot 10^{-6} U + 1 \mu$ V	> 1000 V see high voltage calibration on site possible



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks		
<b>DC current</b>	20 mV ... < 330 mV		$7 \cdot 10^{-6} U + 1 \mu V$	I=measured value		
	330 mV ... < 3,3 V		$5 \cdot 10^{-6} U + 2 \mu V$			
	3,3 V ... < 33 V		$7 \cdot 10^{-6} U + 65 \mu V$			
	33 V ... < 330 V		$8 \cdot 10^{-6} U + 290 \mu V$			
	330 V ... 1000 V		$8 \cdot 10^{-6} U + 435 \mu V$			
	1 pA ... < 20 pA		$3,95 \cdot 10^{-3} I$			
	Calibration of current calibrators	20 pA ... < 200 pA			$1,65 \cdot 10^{-3} I$	calibration on site possible 1 $\mu A$ ... 20 A
		200 pA ... < 2 nA			$9,50 \cdot 10^{-4} I$	
		2 nA ... < 2 $\mu A$			$525 \cdot 10^{-6} I$	
		2 $\mu A$ ... < 100 $\mu A$			$25 \cdot 10^{-6} I + 1,5 nA$	
100 $\mu A$ ... < 1 mA			$25 \cdot 10^{-6} I + 12 nA$			
1 mA ... < 10 mA			$25 \cdot 10^{-6} I + 90 nA$			
10 mA ... < 100 mA			$45 \cdot 10^{-6} I + 0,7 \mu A$			
100 mA ... < 1 A			$130 \cdot 10^{-6} I + 20 \mu A$			
1 A ... 20 A			$60 \cdot 10^{-6} I$			
Calibration of current measurement instruments		1 pA ... < 10 pA		$2,9 \cdot 10^{-3} I$	calibration on site possible 1 $\mu A$ ... 20 A	
	10 pA ... < 100 pA		$1,05 \cdot 10^{-3} I$			
	100 pA ... < 1 nA		$725 \cdot 10^{-6} I$			
	1 nA ... < 10 nA		$1,04 \cdot 10^{-3} I$			
	10 nA ... < 100 nA		$70 \cdot 10^{-6} I$			
	100 nA ... < 1 $\mu A$		$65 \cdot 10^{-6} I$			
	1 $\mu A$ ... < 10 $\mu A$		$35 \cdot 10^{-6} I$			
	10 $\mu A$ ... < 100 $\mu A$	Compliance < 1 V	$30 \cdot 10^{-6} I + 2 nA$			
	100 $\mu A$ ... < 1 mA		$30 \cdot 10^{-6} I + 20 nA$			
	1 mA ... < 10 mA		$30 \cdot 10^{-6} I + 0,1 \mu A$			
10 mA ... < 100 mA		$45 \cdot 10^{-6} I + 0,7 \mu A$				



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks
<b>DC resistance</b>	100 mA ... < 330 mA		$130 \cdot 10^{-6} / + 20 \mu\text{A}$	Only fixed values calibration on site possible up to 10 G $\Omega$  R=measured value
	330 mA ... < 1 A		$135 \cdot 10^{-6} / + 20 \mu\text{A}$	
	1 A ... < 2,2 A		$150 \cdot 10^{-6} /$	
	2,2 A ... < 11 A		$170 \cdot 10^{-6} /$	
	11 A ... 20 A		$350 \cdot 10^{-6} /$	
Calibration of resistance measurement instruments	0,001 $\Omega$		$40 \cdot 10^{-6} R$	
	0,01 $\Omega$		$25 \cdot 10^{-6} R$	
	0,1 $\Omega$		$20 \cdot 10^{-6} R$	
	1 $\Omega$		$78 \cdot 10^{-6} R$	
	10 $\Omega$		$75 \cdot 10^{-6} R$	
	100 $\Omega$		$19 \cdot 10^{-6} R$	
	1 k $\Omega$		$19 \cdot 10^{-6} R$	
	10 k $\Omega$		$19 \cdot 10^{-6} R$	
	100 k $\Omega$		$44 \cdot 10^{-6} R$	
	1 M $\Omega$		$180 \cdot 10^{-6} R$	
	10 M $\Omega$		$720 \cdot 10^{-6} R$	
	100 M $\Omega$		$35 \cdot 10^{-6} R$	
	1 G $\Omega$		$65 \cdot 10^{-6} R$	
	10 G $\Omega$		$75 \cdot 10^{-6} R$	
	100 G $\Omega$		$110 \cdot 10^{-6} R$	
<b>DC resistance</b>	1 T $\Omega$ ; 10 T $\Omega$		$450 \cdot 10^{-6} R$	
	100 T $\Omega$		$1,80 \cdot 10^{-3} R$	
	0,001 $\Omega$ ... < 0,01 $\Omega$		$40 \cdot 10^{-6} R$	
Calibration of resistors	0,01 $\Omega$ ... < 0,1 $\Omega$		$25 \cdot 10^{-6} R$	
	0,1 $\Omega$ ... < 1 $\Omega$		$20 \cdot 10^{-6} R$	



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks	
	1 $\Omega$ ... < 10 $\Omega$		$20 \cdot 10^{-6} R + 60 \mu\Omega$		
	10 $\Omega$ ... < 1 k $\Omega$		$15 \cdot 10^{-6} R + 600 \mu\Omega$		
	1 k $\Omega$ ... < 10 k $\Omega$		$15 \cdot 10^{-6} R + 6 \text{ m}\Omega$		
	10 k $\Omega$ ... < 100 k $\Omega$		$14 \cdot 10^{-6} R + 60 \text{ m}\Omega$		
	100 k $\Omega$ ... < 1 M $\Omega$		$20 \cdot 10^{-6} R + 2,5 \Omega$		
	1 M $\Omega$ ... < 10 M $\Omega$		$60 \cdot 10^{-6} R + 120 \Omega$		
	10 M $\Omega$ ... < 100 M $\Omega$		$600 \cdot 10^{-6} R + 1,2 \text{ k}\Omega$		
	100 M $\Omega$ ... < 1 G $\Omega$		$6,1 \cdot 10^{-3} R + 12 \text{ k}\Omega$		
	100 M $\Omega$	U = 10 V, 50 V	$42 \cdot 10^{-6} R$	Only fixed values	
	1 G $\Omega$	U = 10 V, 50 V	$68 \cdot 10^{-6} R$		
	10 G $\Omega$	U = 20 V, 50 V, 100 V	$75 \cdot 10^{-6} R$		
	100 G $\Omega$	U = 200 V, 500 V	$120 \cdot 10^{-6} R$		
	1 T $\Omega$	U = 500 V, 700 V	$550 \cdot 10^{-6} R$		
	10 T $\Omega$	U = 500 V, 1 kV	$510 \cdot 10^{-6} R$		
	100 T $\Omega$	U = 500 V, 1 kV	$2,0 \cdot 10^{-3} R$		
<b>AC resistance</b>					
Calibration of resistance measurement instruments	1 $\Omega$ ; 10 $\Omega$ ; 100 $\Omega$ ; 1 k $\Omega$ ; 2 k $\Omega$ ; 4 k $\Omega$ ; 6 k $\Omega$ ; 8 k $\Omega$ ; 10 k $\Omega$ ; 100 k $\Omega$ ; 1 M $\Omega$	1 kHz	$510 \cdot 10^{-6} R$		Only fixed values calibration on site possible
Calibration of resistors	1 $\Omega$ ... 1 M $\Omega$	1 kHz	$510 \cdot 10^{-6} R$		
<b>DC power</b>					
Calibration of power measurement instruments	100 mW ... 300 W	1 V ... 1 kV 100 mA ... 300 mA	$340 \cdot 10^{-6} P$		calibration on site possible
	300 mW ... 1 kW	1 V ... 1 kV 300 mA ... 1 A	$210 \cdot 10^{-6} P$		
	1 W ... 2,2 kW	1 V ... 1 kV 1 A ... 2,2 A	$160 \cdot 10^{-6} P$		
	2,2 W ... 11 kW	1 V ... 1 kV 2,2 A ... 11 A	$180 \cdot 10^{-6} P$		
	11 W ... 20 kW	1 V ... 1 kV 11 A ... 20 A	$360 \cdot 10^{-6} P$		



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks
AC voltage  Calibration of voltage calibrators	10 mV ... < 22 mV	10 Hz ... < 20 Hz	$610 \cdot 10^{-6} U + 6 \mu\text{V}$	calibration on site possible
		20 Hz ... < 40 Hz	$310 \cdot 10^{-6} U + 6 \mu\text{V}$	
		40 Hz ... < 1 kHz	$350 \cdot 10^{-6} U + 4 \mu\text{V}$	
		1 kHz ... < 20 kHz	$380 \cdot 10^{-6} U + 4 \mu\text{V}$	
		20 kHz ... < 50 kHz	$500 \cdot 10^{-6} U + 4 \mu\text{V}$	
		50 kHz ... 100 kHz	$1,1 \cdot 10^{-3} U + 5 \mu\text{V}$	
	22 mV ... < 100 mV	10 Hz ... < 20 Hz	$580 \cdot 10^{-6} U + 25 \mu\text{V}$	
		20 Hz ... < 40 Hz	$275 \cdot 10^{-6} U + 20 \mu\text{V}$	
		40 Hz ... < 1 kHz	$145 \cdot 10^{-6} U + 4 \mu\text{V}$	
		1 kHz ... < 20 kHz	$200 \cdot 10^{-6} U + 4 \mu\text{V}$	
		20 kHz ... < 50 kHz	$390 \cdot 10^{-6} U + 4 \mu\text{V}$	
		50 kHz ... 100 kHz	$980 \cdot 10^{-6} U + 4 \mu\text{V}$	
	100 mV ... < 1 V	10 Hz ... < 20 Hz	$560 \cdot 10^{-6} U + 35 \mu\text{V}$	
		20 Hz ... < 40 Hz	$235 \cdot 10^{-6} U + 30 \mu\text{V}$	
		40 Hz ... < 1 kHz	$105 \cdot 10^{-6} U + 30 \mu\text{V}$	
		1 kHz ... < 20 kHz	$175 \cdot 10^{-6} U + 30 \mu\text{V}$	
		20 kHz ... < 50 kHz	$370 \cdot 10^{-6} U + 35 \mu\text{V}$	
		50 kHz ... < 100 kHz	$940 \cdot 10^{-6} U + 35 \mu\text{V}$	
		100 kHz ... < 300 kHz	$3,5 \cdot 10^{-3} U + 120 \mu\text{V}$	
		300 kHz ... 1 MHz	$1,2 \cdot 10^{-2} U + 200 \mu\text{V}$	
	1 V ... < 2,2 V	10 Hz ... < 20 Hz	$550 \cdot 10^{-6} U + 280 \mu\text{V}$	
		20 Hz ... < 40 Hz	$215 \cdot 10^{-6} U + 250 \mu\text{V}$	
		40 Hz ... < 1 kHz	$90 \cdot 10^{-6} U + 235 \mu\text{V}$	
		1 kHz ... < 20 kHz	$165 \cdot 10^{-6} U + 235 \mu\text{V}$	
20 kHz ... < 50 kHz		$360 \cdot 10^{-6} U + 235 \mu\text{V}$		
50 kHz ... < 100 kHz		$940 \cdot 10^{-6} U + 235 \mu\text{V}$		
100 kHz ... < 300 kHz		$3,5 \cdot 10^{-3} U + 1,2 \text{ mV}$		
300 kHz ... < 1 MHz		$1,2 \cdot 10^{-2} U + 1,2 \text{ mV}$		
2,2 V ... < 10 V	10 Hz ... < 20 Hz	$550 \cdot 10^{-6} U + 280 \mu\text{V}$		
	20 Hz ... < 40 Hz	$215 \cdot 10^{-6} U + 250 \mu\text{V}$		
	40 Hz ... < 1 kHz	$90 \cdot 10^{-6} U + 235 \mu\text{V}$		
	1 kHz ... < 20 kHz	$170 \cdot 10^{-6} U + 235 \mu\text{V}$		
	20 kHz ... < 50 kHz	$355 \cdot 10^{-6} U + 250 \mu\text{V}$		
	50 kHz ... < 100 kHz	$940 \cdot 10^{-6} U + 260 \mu\text{V}$		



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Calibration of voltage measurement instruments	10 V ... < 100 V	100 kHz ... < 300 kHz	$3,5 \cdot 10^{-3} U + 1,5 \text{ mV}$	calibration on site possible	
		300 kHz ... < 1 MHz	$1,2 \cdot 10^{-2} U + 4,2 \text{ mV}$		
		10 Hz ... < 20 Hz	$550 \cdot 10^{-6} U + 2,4 \text{ mV}$		
		20 Hz ... < 40 Hz	$210 \cdot 10^{-6} U + 2,4 \text{ mV}$		
		40 Hz ... < 20 kHz	$240 \cdot 10^{-6} U + 2,4 \text{ mV}$		
		20 kHz ... < 50 kHz	$410 \cdot 10^{-6} U + 2,4 \text{ mV}$		
		50 kHz ... < 100 kHz	$1,4 \cdot 10^{-3} U + 4,7 \text{ mV}$		
		100 kHz ... < 300 kHz	$4,7 \cdot 10^{-3} U + 12 \text{ mV}$		
	100 V ... < 220 V	300 kHz ... < 1 MHz	$17,5 \cdot 10^{-3} U + 13 \text{ mV}$		
		10 Hz ... < 20 Hz	$575 \cdot 10^{-6} U + 35 \text{ mV}$		
		20 Hz ... < 40 Hz	$245 \cdot 10^{-6} U + 35 \text{ mV}$		
		40 Hz ... < 1 kHz	$470 \cdot 10^{-6} U + 24 \text{ mV}$		
		1 kHz ... < 20 kHz	$700 \cdot 10^{-6} U + 24 \text{ mV}$		
		20 kHz ... < 50 kHz	$1,4 \cdot 10^{-3} U + 24 \text{ mV}$		
		50 kHz ... < 100 kHz	$3,5 \cdot 10^{-3} U + 24 \text{ mV}$		
		220 V ... < 700 V	10 Hz ... < 20 Hz		$610 \cdot 10^{-6} U + 36 \text{ mV}$
	20 Hz ... < 40 Hz		$260 \cdot 10^{-6} U + 36 \text{ mV}$		
	40 Hz ... < 1 kHz		$470 \cdot 10^{-6} U + 24 \text{ mV}$		
	1 kHz ... < 20 kHz		$710 \cdot 10^{-6} U + 57 \text{ mV}$		
	20 kHz ... < 50 kHz		$1,4 \cdot 10^{-3} U + 57 \text{ mV}$		
	50 kHz ... < 100 kHz		$3,5 \cdot 10^{-3} U + 57 \text{ mV}$		
	700 V ... 1000 V		10 Hz ... < 20 Hz		$410 \cdot 10^{-6} U + 25 \text{ mV}$
			20 Hz ... < 40 Hz		$260 \cdot 10^{-6} U + 25 \text{ mV}$
		40 Hz ... < 100 Hz	$115 \cdot 10^{-6} U + 24 \text{ mV}$		
		100 Hz ... < 10 kHz	$160 \cdot 10^{-6} U + 56 \text{ mV}$		
		10 kHz ... < 20 kHz	$265 \cdot 10^{-6} U + 70 \text{ mV}$		
		20 kHz ... < 30 kHz	$270 \cdot 10^{-6} U + 70 \text{ mV}$		
		30 kHz ... < 100 kHz	$600 \cdot 10^{-6} U + 240 \text{ mV}$		
10 mV ... < 22 mV		45 Hz ... < 1 kHz	$360 \cdot 10^{-6} U + 4 \mu\text{V}$		
	1 kHz ... < 20 kHz	$390 \cdot 10^{-6} U + 4 \mu\text{V}$			
	20 kHz ... 50 kHz	$550 \cdot 10^{-6} U + 4 \mu\text{V}$			
	50 kHz ... 100 kHz	$1,4 \cdot 10^{-3} U + 5 \mu\text{V}$			



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks	
	22 mV ... < 100 mV	45 Hz ... < 1 kHz	$150 \cdot 10^{-6} U + 4 \mu\text{V}$		
		1 kHz ... < 20 kHz	$210 \cdot 10^{-6} U + 4 \mu\text{V}$		
		20 kHz ... < 50 kHz	$400 \cdot 10^{-6} U + 4 \mu\text{V}$		
		50 kHz ... 100 kHz	$990 \cdot 10^{-6} U + 4 \mu\text{V}$		
	100 mV ... < 1 V	45 Hz ... < 1 kHz	$110 \cdot 10^{-6} U + 30 \mu\text{V}$		
		1 kHz ... < 20 kHz	$190 \cdot 10^{-6} U + 30 \mu\text{V}$		
		20 kHz ... < 50 kHz	$380 \cdot 10^{-6} U + 35 \mu\text{V}$		
		50 kHz ... < 100 kHz	$970 \cdot 10^{-6} U + 35 \mu\text{V}$		
	1 V ... < 2,2 V	100 kHz ... < 300 kHz	$3,6 \cdot 10^{-3} U + 120 \mu\text{V}$		
		300 kHz ... < 500 kHz	$1,2 \cdot 10^{-2} U + 200 \mu\text{V}$		
		45 Hz ... < 1 kHz	$100 \cdot 10^{-6} U + 235 \mu\text{V}$		
		1 kHz ... < 20 kHz	$180 \cdot 10^{-6} U + 235 \mu\text{V}$		
	2,2 V ... < 10 V	20 kHz ... < 50 kHz	$370 \cdot 10^{-6} U + 235 \mu\text{V}$		
		50 kHz ... < 100 kHz	$960 \cdot 10^{-6} U + 235 \mu\text{V}$		
		100 kHz ... < 300 kHz	$3,6 \cdot 10^{-3} U + 1,2 \text{ mV}$		
		300 kHz ... < 500 kHz	$1,2 \cdot 10^{-2} U + 1,2 \text{ mV}$		
	10 V ... < 100 V	45 Hz ... < 1 kHz	$100 \cdot 10^{-6} U + 235 \mu\text{V}$		
		1 kHz ... < 20 kHz	$180 \cdot 10^{-6} U + 235 \mu\text{V}$		
		20 kHz ... < 50 kHz	$370 \cdot 10^{-6} U + 250 \mu\text{V}$		
		50 kHz ... < 100 kHz	$970 \cdot 10^{-6} U + 260 \mu\text{V}$		
	100 V ... < 220 V	45 Hz ... < 1 kHz	$250 \cdot 10^{-6} U + 2,4 \text{ mV}$		
		1 kHz ... < 20 kHz	$260 \cdot 10^{-6} U + 2,4 \text{ mV}$		
		20 kHz ... < 50 kHz	$430 \cdot 10^{-6} U + 2,4 \text{ mV}$		
		50 kHz ... < 100 kHz	$1,5 \cdot 10^{-3} U + 4,7 \text{ mV}$		
220 V ... < 700 V	50 Hz ... < 1 kHz	$480 \cdot 10^{-6} U + 24 \text{ mV}$			
	1 kHz ... < 20 kHz	$710 \cdot 10^{-6} U + 24 \text{ mV}$			
	20 kHz ... < 50 kHz	$1,4 \cdot 10^{-3} U + 24 \text{ mV}$			
	50 kHz ... < 100 kHz	$3,5 \cdot 10^{-3} U + 24 \text{ mV}$			
	220 V ... < 700 V	50 Hz ... < 1 kHz	$480 \cdot 10^{-6} U + 24 \text{ mV}$		
		1 kHz ... < 5 kHz	$720 \cdot 10^{-6} U + 57 \text{ mV}$		
		5 kHz ... < 10 kHz	$1,5 \cdot 10^{-3} U + 57 \text{ mV}$		



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks	
<b>AC current</b>	700 V ... 1000 V	50 Hz ... < 1 kHz	$140 \cdot 10^{-6} U + 24 \text{ mV}$	Compliance < 1V calibration on site possible up to 20 A I=measured value	
		1 kHz ... < 5 kHz	$180 \cdot 10^{-6} U + 24 \text{ mV}$		
		5 kHz ... < 10 kHz	$180 \cdot 10^{-6} U + 57 \text{ mV}$		
	10 $\mu$ A ... < 100 $\mu$ A	45 Hz ... 2 kHz	$390 \cdot 10^{-6} I + 20 \text{ nA}$		
		100 $\mu$ A ... < 1 mA	45 Hz ... < 100 Hz		$260 \cdot 10^{-6} I + 0,2 \mu\text{A}$
			100 Hz ... 5 kHz		$390 \cdot 10^{-6} I + 0,2 \mu\text{A}$
		1 mA ... < 10 mA	45 Hz ... < 100 Hz		$260 \cdot 10^{-6} I + 1,2 \mu\text{A}$
			100 Hz ... 5 kHz		$440 \cdot 10^{-6} I + 1,2 \mu\text{A}$
		10 mA ... < 100 mA	45 Hz ... < 100 Hz		$260 \cdot 10^{-6} I + 12 \mu\text{A}$
			100 Hz ... 5 kHz		$350 \cdot 10^{-6} I + 12 \mu\text{A}$
100 mA ... < 1 A	45 Hz ... < 100 Hz	$620 \cdot 10^{-6} I + 240 \mu\text{A}$			
	100 Hz ... 5 kHz	$1,2 \cdot 10^{-3} I + 235 \mu\text{A}$			
Calibration of current calibrators	1 A ... < 10 A	40 Hz ... < 1 kHz	$765 \cdot 10^{-6} I$		
		1 kHz ... 5 kHz	$800 \cdot 10^{-6} I$		
	10 A ... < 20 A	40 Hz ... < 1 kHz	$460 \cdot 10^{-6} I$		
		1 kHz ... 5 kHz	$530 \cdot 10^{-6} I$		
	10 A ... 100 A	50 Hz	$1 \cdot 10^{-3} I + 23 \text{ mA}$		
	30 $\mu$ A ... < 330 $\mu$ A	45 Hz ... 5 kHz	$385 \cdot 10^{-6} I + 0,2 \mu\text{A}$		
		330 $\mu$ A ... < 3,3 mA	45 Hz ... < 100 Hz	$265 \cdot 10^{-6} I + 1,2 \mu\text{A}$	
			100 Hz ... 5 kHz	$445 \cdot 10^{-6} I + 1,2 \mu\text{A}$	
		3,3 mA ... < 33 mA	45 Hz ... < 100 Hz	$265 \cdot 10^{-6} I + 12 \mu\text{A}$	
			100 Hz ... 5 kHz	$445 \cdot 10^{-6} I + 12 \mu\text{A}$	
33 mA ... < 1 A		45 Hz ... < 100 Hz	$615 \cdot 10^{-6} I + 240 \mu\text{A}$		
		100 Hz ... 5 kHz	$1,2 \cdot 10^{-3} I + 235 \mu\text{A}$		
1 A ... < 3 A		45 Hz ... < 1 kHz	$800 \cdot 10^{-6} I$		
	1 kHz ... 5 kHz	$830 \cdot 10^{-6} I$			
3 A ... 20 A	45 Hz ... < 1 kHz	$490 \cdot 10^{-6} I$			
Calibration of current measurement instruments				Compliance < 1V calibration on site possible	





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<b>High voltage DC</b>		1 kHz ... 5 kHz	$520 \cdot 10^{-6} /$	
Calibration of high voltage sources	1 kV ... 20 kV 20 kV ... 25 kV 25 kV ... 30 kV	DC DC DC	0,15 % + 1 V 0,20 % + 8 V 0,50 % + 15 V	calibration on site possible
Calibration of high voltage measurement instruments	1 kV ... 8 kV 8 kV ... 15 kV	DC DC	0,2 % + 1 V 0,3 % + 1 V	
<b>High voltage AC</b>				
Calibration of high voltage sources	1 kV ... 12 kV	(50 $\pm$ 5) Hz	0,15 % + 1 V	Sine wave shaped calibration on site possible
Calibration of high voltage measurement instruments	1 kV ... 6 kV 6 kV ... 12 kV	(50 $\pm$ 5) Hz	0,2 % + 1 V 0,3 % + 1 V	Sine wave shaped
<b>Capacity</b>				
Calibration of capacities	10 pF ... 10 $\mu$ F	1 kHz	$510 \cdot 10^{-6} C$	calibration on site possible
Calibration of capacity measurement instruments	10 pF; 100 pF; 1 nF; 2 nF; 4 nF; 6 nF; 8 nF; 10 nF; 100 nF, 1 $\mu$ F; 10 $\mu$ F	1 kHz	$725 \cdot 10^{-6} pF$ $510 \cdot 10^{-6} pF$	Only fixed values calibration on site possible
<b>Inductivity</b>				
Calibration of inductances	100 $\mu$ H ... 10 H	1 kHz	$525 \cdot 10^{-6} L$	calibration on site possible
Calibration of inductances measurement instruments	100 $\mu$ H; 1 mH; 10 mH; 25 mH; 50 mH; 75 mH; 100 mH; 1 H; 10 H	1 kHz	$1.10 \cdot 10^{-3} L$ $525 \cdot 10^{-6} L$	Only fixed values calibration on site possible
<b>Frequency</b>				
Calibration of frequency counters	10 MHz		$5,9 \cdot 10^{-11} f$	Measurement time > 24 h
Calibration of frequency generators	1 Hz ... 1,5 GHz		$5,8 \cdot 10^{-9} f$	Measurement time



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<b>Burst generators</b>				Calibration of <b>Burst</b> generators according to IEC <b>61000-4-4</b> calibration on site possible
Amplitudes				
- at generator	100 V ... 8 kV	Into 50 $\Omega$	2,8 %	
- at generator	100 V ... 8 kV	Into 1000 $\Omega$	3,2 %	
- at coupling network	100 V ... 8 kV	Into 50 $\Omega$	5,8 %	
Pulse width and delay time	5 ns ... 10 $\mu$ s		2,0 %	
Rise time	3 ns ... 1 $\mu$ s		130 ps	
Pulse frequency	1 kHz ... 200 kHz		0,5 %	
Burst duration time/interval	10 $\mu$ s ... 500 ms		0,5 %	
<b>Surge generators</b>				
Voltage amplitude	100 V ... 20 kV	open circuit	2,5 %	
Rise time	0,4 $\mu$ s ... 5 $\mu$ s		3,5 ns	
Pulse width	10 $\mu$ s ... 100 $\mu$ s		2,0 %	
Current amplitude	1 A ... 10 kA	short circuit	1,9 %	
Rise time	0,5 $\mu$ s ... 10 $\mu$ s		5,5 ns	
Pulse width	10 $\mu$ s ... 50 $\mu$ s		2,0 %	
<b>Transients</b>				According to IEC <b>61000-4-11</b> calibration on site possible
Voltage variations	1 V ... 240 V/50 Hz		1,8 %	
Voltage dips, short interrupts				
Inrush current	< 1000 A		2,5 %	



## SCS Directory

Accreditation number: SCS 0042

Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks
Rise time	1 $\mu$ s ... 1 ms		15 ns	Calibration of ringwave generators according to <b>IEC 61000-4-12</b> calibration on site possible
Duration time	0,5 s ... 6 s		0,5 %	
<b>Ringwave generators</b>				
Voltage amplitude	100 V ... 8 kV	open circuit	1,8 %	
Rise time	0,4 $\mu$ s ... 1 $\mu$ s		2,5 ns	
Oscillation period	1 $\mu$ s ... 20 $\mu$ s		2,0 %	
Current amplitude	1 A ... 600 A		2,0 %	
Current amplitude		Short circuit		
Rise time	0,5 $\mu$ s ... 4 $\mu$ s		2,5 ns	
<b>Damped oscillatory wave generators</b>				
Voltage amplitude	100 V ... 8 kV 100 V ... 8 kV	100 kHz 1 MHz	3.0 % 4.5 %	
Rise time	60 ns ... 90 ns		2,5 ns	
Duration time / repetitions rate	10 $\mu$ s ... 500 ms		0,5 %	
Frequency	90 kHz ... 1,1 MHz		0,5 %	
Current amplitude	0,5 A ... 40 A		2,5 %	
<b>Electrostatic discharge (ESD)</b>				Calibration of <b>ESD</b> generators according to <b>IEC 61000-4-2 / ISO 10605</b> Target according to IEC 61000-4-2 Annex B
Current pulse	Short circuit	Measurement at: $\pm$ 2... 30 kV		



## SCS Directory

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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks
Peak value	1 A ... 120 A		4,8 %	
Characteristic values	0,3 A ... 60 A	after 20...40 ns	4,8 % + (16 %)*	
		after 60 ns	4,8 % + (8 %)*	
		after 60 ... 800 ns	4,8 % + (8 %)	
			(%)* Reproductability and Geometry of UUT	
Rise time	400 ps ... < 700 ps		60 ps	
	700 ps ... 2 ns		45 ps	
<b>Flickermeter</b>	Pst = 1,2,3	Square wave modulated sine wave of 230 V and 50 Hz, relative voltage change $\Delta U/U$		Calibration of Flickermeter according to <b>IEC 61000-4-15</b> calibration on site possible
Flicker (Pst)				Voltage gradient according to table 5 and voltage expanded according to page16 in <b>IEC 61000-4-15</b>
	Range $\Delta U/U$		Pst-value	
	0,4 % ... 0,725 %		1,8 %	
	0,725 % ... 0,91 %		1,0 %	
	0,91 % ... 1,46 %		0,8 %	
	1,46 % ... 10 %		0,5 %	
<b>Revolution</b>	1 U/min ... < 5 U/min		$2,45 \cdot 10^{-2} \cdot n$	Optically
Revolution counter	5 U/min ... < 100 U/min		$4,70 \cdot 10^{-4} \cdot n$	n=measured value
	100 U/min ... 200000 U/min		$2,35 \cdot 10^{-4} \cdot n$	

The dimensionless parts of the measurement uncertainty are relative values, referred to the measured value.

Higher measurement uncertainties are possible for on-site calibrations.

In case of contradictions in the language versions of the directories, the German version shall apply.

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