



Swiss Confederation

SCS Directory

Accreditation number: SCS 0114

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

AMETEK CTS GmbH
Sternenhofstrasse 15
4153 Reinach
(Switzerland)

Head: Erich Brogli
Responsible for MS: Sven Schäuble
Telephone: +41 61 204 41 11
E-Mail: erich.brogli@ametek.com
Internet: <http://www.ametek-cts.com>
Initial accreditation: 22.06.2009
Current accreditation: 22.06.2019 to 21.06.2024
Scope of accreditation see: www.sas.admin.ch
(Accredited bodies)

Site under the accreditation:

Lünener Strasse 211
59174 Kamen
(Germany)

Head: Michael Kreisel
Responsible for MS: Manuel Mihlan
Telephone: +49 2307 26070 0
E-Mail: michael.kreisel@ametek.com
Internet: <http://www.ametek-cts.com>

Scope of accreditation as of 08.10.2020

Calibration laboratory for electrical quantities

Calibration and Measurement Capability (CMC)

Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement uncertainty \pm ¹⁾	Remarks
DC Voltage ²⁾	1 mV ... 1000 V		0,20 %	Output Voltage of Arbitrary Generators and Voltage Sources ISO 7637-2
DC High Voltage ²⁾	100 V ... 30 kV		3,18 %	Output Voltage of Test Generators and Charging Voltages of Pulse Circuits IEC 61000-4-x ISO 7637-2

¹⁾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.

²⁾ On-site calibrations with increased measurement uncertainty possible.



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement uncertainty \pm ¹⁾	Remarks
AC Voltage ²⁾	1 mV ... 1000 V		0,23 %	Arbitrary Generators, Power Fail Generators, Variacs IEC 61000-4-x ISO 7637-2
DC Current ²⁾	1 mA ... 100 A		0,20 %	
AC Current ²⁾	1 mA ... 100 A		0,20 %	
Frequency, Sine ²⁾	DC ... 1 MHz 10 kHz ... 4 GHz		4·10 ⁻³ 17,9·10 ⁻⁶	Only DC ... 1 MHz on-site possible
DC Resistance ²⁾	1 mΩ ... 10 MΩ		0,24 %	
Inductance ²⁾	1 μH ... 1000 H	f=1 kHz	0,21 %	
Capacitance ²⁾	100 pF ... 100 μF	f=1 kHz	0,44 %	
ESD				IEC 61000-4-2 ISO 10605
Voltage	100 V ... 30 kV	DC	3,18 %	
Current Peak	0 A ... 120 A		5,89 %	
Current	Current	@30 ns @60 ns @60-800 ns	5,89 % + (12 %)* 6,02 % + (8 %)* 6,02 % + (8 %)* (%)* Reproducibility device setup	
Rise Time	500 ps ... 1 μs		39,49 ps	
Burst into 50 Ω ²⁾				IEC 61000-4-4 ISO 7637-2
Voltage	20 V ... 6000 V 200 V ... 8000 V 20 V ... 8000 V	Common Mode	4,95 % 5,01 % 7,63 %	
Rise Time	1 ns ... 1 μs		184 ps	
Pulse Duration	10 ns ... 10 μs		1602 ps	
Repetition Frequency	1 Hz ... 1 MHz		4·10 ⁻³	
Burst into 1000 Ω ²⁾				IEC 61000-4-4 ISO 7637-2
Voltage	20 V ... 6000 V 200 V ... 8000 V 25 V ... 1000 V	Common Mode	5,04 % 5,35 % 7,70 %	
Rise Time	1 ns ... 1 μs		258 ps	

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Pulse Duration	10 ns ... 10 μ s		2,4 ns	ISO 7637-2 IEC 61000-4-5
Repetition Frequency	1 Hz ... 1 MHz		$4 \cdot 10^{-3}$	
Pulses μs range ²⁾				
Voltage	100 V ... 12000 V 1000 V ... 20000V		4,87 % 4,96 %	
Rise Time	100 ns ... 100 μ s	Voltage	2,1 ns	ISO 7637-2
		Current	51 ns	
Pulse Duration	1 μ s ... 1000 μ s	Voltage	540 ns	
		Current	128 ns	
Current	1 A ... 1000 A 100 A ...20'000 A		3,67 % 3,88 %	
Pulses ms range ²⁾				
Voltage	10 V ... 1000 V		4,65 %	
Rise Time	50 μ s ... 50 ms		3,1 ns	
Pulse Duration	1000 μ s ... 1500 ms		2,6 μ s	
Current	1 A ... 5000 A		6,46 %	
Damped Oscillatory ²⁾				IEC 61000-4-12
Voltage	200 V ... 4000V		10,5 %	
Current	1 A ... 120A		3,70 %	
Rise Time	0,05 μ s ... 5 μ s	Voltage	10 ns	
		Current	7 ns	
Frequency	DC ... 1 MHz		$4 \cdot 10^{-3}$	ANSI C62.41 IEC 61000-4-12
Ringwave ²⁾				
Voltage	200 V ... 6000 V		4,87 %	
Current	5,3 A ... 500 A		3,68 %	
Rise Time	0,1 μ s ... 5 μ s	Voltage	2,1 ns	
		Current	7 ns	
Frequency	DC ... 250 kHz		$4 \cdot 10^{-3}$	

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Power Fail ²⁾				IEC 61000-4-11
Voltage (cont.)	-400 V ... 400 V	With or without load	0,05 %	
Peak Voltage (Over- and Undershoot)	-20 V ... 270 V	100 Ω load	3,35 %	
Rise Time/Fall Time	0,1 μ s ... 10 μ s	100 Ω load	1,78 ns	
Current	10 A ... 50 A	100 Ω load	2,27 %	
Peak Current (Inrush)	200 A ... 1000 A		1,94 %	
Phase	0 ° ... 360 °		1,27 °	
ESD target				IEC 61000-4-2 ISO 10605
Input Impedance	0,1 Ω ... 50 Ω	DC	1,36 %	
Transfer Impedance	0,1 Ω ... 50 Ω	DC	1,38 %	
Insertion Loss	20 dB ... 60 dB	20 kHz ... 4 GHz	0,66 dB	
ESD target adapter				IEC 61000-4-2 ISO 10605
Return Loss (low reflect)	-60dB ... -20dB	20 kHz ... 1 GHz	0,03	
	-40dB ... -5dB	>1 GHz ... 4 GHz	0,04	
Insertion Loss	0 dB ... 10dB	20 kHz ... 4 GHz	0,07 dB	
Burst adapter (High Imp)				IEC 61000-4-4
Input Impedance	100 Ω ... 100 k Ω	DC	0,16 %	
Insertion loss	45 dB ... 65dB	20 kHz ... 400 MHz	0,61 dB	
Burst adapter (Match)				IEC 61000-4-4
Input Impedance	40 Ω ... 60 Ω	DC	0,16 %	
Insertion loss	35 dB ... 55 dB	20 kHz ... 400 MHz	0,39 dB	
RF-voltage (50 Ω)	200 μ V ... 10 V	9 kHz ... 3 GHz	1,4 %	IEC 61000-4-6
	0,01 V ... 100 V	100 kHz ... 2 GHz	1,5 %	
Amplitude Modulation				IEC 61000-4-6
Frequency	100 Hz ... 10 MHz	Carrier f = 100 kHz ... 300 MHz	18 \cdot 10 ⁻⁶	
Modulation Index	10 % ... 95 %	Carrier f = 100 kHz ... 300 MHz	1,1 %	

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Spurious emissions	0 dBc ... 50 dBc	Carrier f = 100 kHz ... 300 MHz	0,69 dB	IEC 61000-4-6
150-50Ω-Adapter				IEC 61000-4-6
Insertion Loss	5 dB ... 12 dB	20 kHz ... 300 MHz	0,29 dB	
	5 dB ... 12 dB	>300 MHz...1 GHz	0,47 dB	
Matching attenuator				Coaxial Connector
Attenuation	0 dB ... 40 dB	20 kHz ... 300 MHz	0,12 dB	
	0 dB ... 40 dB	>300 MHz...1 GHz	0,21 dB	
CDN				IEC 61000-4-6
Output Impedance	90 Ω ... 210 Ω	20 kHz ... 300 MHz	8,4 Ω	
50 Ohm load				IEC 61000-4-6
Impedance	40 Ω ... 60 Ω	20 kHz ... 300 MHz	1,6 Ω	
		>300 MHz ... 1 GHz	2,9 Ω	
S11	≤ 0.2	20 kHz ... 1 GHz	0,02	
AC – DC – Harmonics Source ²⁾				EN/IEC 61000-4-11, EN/IEC 61000-4-13, EN/IEC 61000-4-14, EN/IEC 61000-4-17, EN/IEC 61000-4-28, EN/IEC 61000-4-29, EN/IEC 61000-3-2, EN/IEC 61000-3-3, EN/IEC 61000-3-11, EN/IEC 61000-3-12
AC Voltage RMS	1 mV ... 750 V	15 Hz ... 850 Hz	0,2 %	
AC Voltage RMS	1 mV ... 100 V	1 Hz ... 10 kHz	0,2 %	
AC Voltage Peak	1 mV ... 1000 V	15 Hz ... 850 Hz	0,2 %	
Noise on DC	1 mV ... 10 V	1 Hz ... 20 MHz	1,08 %	
DC Voltage	1 mV ... 1000 V		0,1 %	
AC Current RMS	0,1 A ... 200 A	15 Hz ... 500 Hz	0,3 %	
Rise- / Fall-Time DC, AC	100 ns ... 500 us	0 V ... 1000 V	< 2 ns	
Frequency	1 Hz ... 10 kHz		0,012 %	
THD Voltage	10 Hz ... 10 kHz		0,253 %	
Phase	0 ° ... 360 °	1 Hz ... 10 kHz	2 °	

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Harmonics & Flicker Power Analyzer ²⁾				EN/IEC 61000-4-7, EN/IEC 61000-3-2, JIS C 61000-3-2, EN/IEC 61000-3-12
AC Voltage RMS	1 V ... 1000 V	16 Hz ... 10 kHz	0,32 %	
AC Current RMS	2.2 A ... 80 A	10 Hz ... 1 kHz	0,18 %	
AC Current RMS	1 mA ... 2,2 A	10 Hz ... 5 kHz	< 0,35 %	
THD Voltage	0 % ... 10 %	16 Hz ... 6kHz	0,32 %	
THD Current	0 % ... 10 %	16 Hz ... 6kHz	0,34 %	
Flicker ²⁾				
PST	0 ... 5	Set values of CPM, dV/V as per standard	0,124 %	IEC 61000-4-15, IEC 61000-3-3, IEC 61000-3-11
dmax	0 % ... 10 %	Use of procedure as per standard	1,0 %	
dc	0 % ... 10 %	Use of procedure as per standard	1,0 %	
Tmax	0 s ... 10s	Use of procedure as per standard	1,0 %	
Flicker Impedance ²⁾				IEC 61000-3-3, -11, IEC TR 60725
Flicker Impedance R	0,1 R ... 0,5 R		< 0,118 %	
Flicker Impedance L	100 uH ... 1 mH		< 0,118 %	
Flicker Impedance Z	0,1 R ... 0,5 R		0,118 %	
Artificial Network ²⁾				At site Reinach only ISO 7637-2, ISO 11452-4, CISPR 16-1-2, CISPR 25, GS 95002
Impedance Absolute	0,5 Ω ... 110 Ω	0,1 ... 0,5 MHz	0,3 Ω	
	0,5 Ω ... 110 Ω	0,5 ... 1 MHz	0,5 Ω	
	0,5 Ω ... 110 Ω	1,0 ... 200 MHz	1,0 Ω	
Impedance Phase	0,1° ... 120°	0,1 ... 0,3 MHz	4.0 °	
	0,1° ... 120°	0,3 ... 200 MHz	2.0 °	

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Isolation	0.0 ... 70 dB	0,1 ... 0,5 MHz	0,5 dB	
	0.0 ... 70 dB	0,5 ... 200 MHz	1,0 dB	
VDF	0.0 ... 30 dB	0,1 ... 200 MHz	0,5 dB	

All quantities: in/from²⁾ both sites.

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