

Common Measuring Functions of the METRAClip87 and the METRAClip88

Measurements via Connector Sockets

V DC Voltage Measurement

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
0.00 ... 99.99 V	10 mV	0.00 V ... 9.99 V: $\pm(1.0\% \text{ rdg.} + 10 \text{ d})$ 10.00 V ... 99.99 V $\pm(1.0\% \text{ rdg.} + 3 \text{ d})$
100.0 ... 999.9 V	100 mV	$\pm(1.0\% \text{ rdg.} + 3 \text{ d})$
1000 V	1 V	

Input impedance 10 M Ω

V AC Voltage Measurement

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
0.15 ... 99.99 V	10 mV	0.15 V ... 9.99 V: $\pm(1.0\% \text{ rdg.} + 10 \text{ d})$ 10.00 V ... 99.99 V $\pm(1.0\% \text{ rdg.} + 3 \text{ d})$
100.0 ... 999.9 V	100 mV	$\pm(1.0\% \text{ rdg.} + 3 \text{ d})$
1000 V TRMS 1400 V _{peak}	1 V	

AC frequency range 45 ... 65 Hz (reference range)

Bandwidth 3 kHz

Input impedance 10 M Ω

V AC+DC Voltage Measurement

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
0.15 ... 99.99 V	10 mV	0.15 V ... 9.99 V: $\pm(1.0\% \text{ rdg.} + 10 \text{ d})$ 10.00 V ... 99.99 V $\pm(1.0\% \text{ rdg.} + 3 \text{ d})$
100.0 ... 999.9 V	100 mV	$\pm(1.0\% \text{ rdg.} + 3 \text{ d})$
1000 V TRMS 1400 V _{peak}	1 V	

AC frequency range 45 ... 65 Hz (reference range)

Bandwidth AC 3 kHz

Input impedance 10 M Ω

Continuity Test Ω

(programmable acoustic threshold, default value = 40 Ω)

Measuring Range	Resolution	Intrinsic Uncertainty under reference conditions*
0.0 ... 999.9 Ω	0.1 Ω	$\pm(1.0\% \text{ rdg.} + 5 \text{ d})$

Open-circuit voltage $\leq 3.6 \text{ V}$

Test current 550 μA

Resistance Measurement Ω

Measuring Range	Resolution	Intrinsic Error under Reference Conditions ¹
0.0 ... 999.9 Ω	0.1 Ω	$\pm(1.0\% \text{ rdg.} + 5 \text{ d})$
1000 ... 9999 Ω	1 Ω	
10.00 ... 99.99 k Ω	10 Ω	

Open-circuit voltage $\leq 3.6 \text{ V}$

Test current 1 k Ω range: 550 μA

10 k Ω range: 100 μA

100 k Ω range: 10 μA

Frequency Measurement for Alternating Voltage

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
5.0 ... 999.9 Hz	0.1 Hz	$\pm(0.4\% \text{ rdg.} + 1 \text{ d})$
1000 ... 9999 Hz	1 Hz	
10.00 ... 19.99 kHz	10 Hz	

Harmonics, THD

Measurement with Voltage via Connector Sockets,

Measurement with Current via Current Clamp

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
THDr: 0.0 ... 100%	0.1%	V: $\pm(5.0\% \text{ rdg.} \pm 2 \text{ d})$ A: $\pm(5.0\% \text{ rdg.} \pm 5 \text{ d})$
THDf: 0.0 ... 1000%	0.1%	V: $\pm(5.0\% \text{ rdg.} \pm 2 \text{ d})$ A: $\pm(5.0\% \text{ rdg.} \pm 5 \text{ d})$

THDr: harmonic component relative to the TRMS value of the fundamental harmonic

THDf: harmonic component relative to the fundamental harmonic

Calculation Functions

Power Factor PF

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
0.00 ... 0.49	0.01	$\pm(3\% \text{ rdg.} + 3 \text{ d})$
0.50 ... 1.00		$\pm(2\% \text{ rdg.} + 3 \text{ d})$

Crest Factor CF

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
1.00 ... 3.50	1 d	$\pm(2\% \text{ rdg.} + 2 \text{ d})$
3.51 ... 5.99		$\pm(5\% \text{ rdg.} + 2 \text{ d})$
6.00 ... 10.00		$\pm(10\% \text{ rdg.} + 2 \text{ d})$

Specified measuring range as of 5 V or 5 A

The peak values are limited to 1500 V or 1500 A.

Intrinsic uncertainty up to 400 Hz

Displacement Factor (DPF),

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
0.00 ... 1.00	0.01	$\pm(5\% \text{ rdg.} + 2 \text{ d})$

Measuring range as of 1 A AC: 0 ... 100% of MR

Residual Ripple in DC Mode

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
0.1 ... 99.9%	0.1	$\pm(5\% \text{ rdg.} + 10 \text{ d})$
100.0 ... 1000%		

Specified measuring range as of 3 A DC or 2 V DC

Key

rdg. = measured value (reading); d = digits