

METRAClip 72 and 75 Clip-On Multimeters

3-349-250-03
1/3.04

- **Clip-on current measurement:**
A AC RMS and DC
(automatic or manual switching)
- **Multimeter functions:**
V (AC RMS and DC)
 Ω Resistance and continuity testing:
Indication if a programmable threshold is fallen short of
→ Diode test
- **Additional measurements:**
METRAClip 72: Frequency (Hz),
power (W), power factor,
phase sequence (2-wire connection)
Inrush function:
tracking of rapid current changes
METRAClip 75: Temperature in °C or °F
with type K thermocouple (accessory)
- **Compact and user-friendly**
One-hand operation and illuminated digital display
- **Extremely safe** thanks to CAT III 600 V



Applications

- Measurement of starting current for electric motors
- Measurement of motor temperature rise with temperature sensors
- Measurement of direct current, e.g. automotive batteries

Features

Display Memory (data hold)

The momentary measured value can be “frozen” at the display.

Data Logging (max., min., peak)

Measured values can be stored for long-term observation of measured quantities. At the same time, maximum, minimum and peak values are acquired for the duration of the selected recording time.

Safety Features

- If the V-LIVE function is activated, signals with a value of greater 45 V are indicated acoustically.
- Visual indication is provided in the event that the measuring range is exceeded.
- An intermittent acoustic signal warns the user of voltages which are equal to or greater than the safety voltage of 600 V_{DC} or RMS.

Automatic Shutdown

The device is shut down automatically in the event that none of the keys or the rotary switch are activated for a duration of 10 minutes. Automatic shutdown can be deactivated.

Inrush Current (METRAClip 72 only)

Measurement of motor starting current characteristics based upon the relationship between amplitude and time.

Applicable Regulations and Standards

IEC 61010-1/EN 61010-1/ VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use
IEC 61010-2-032/ EN 61010-2-032/ VDE 0411-2-032	Special requirements for clip-on ammeters
DIN EN 61326 VDE 0843, part 20	Electrical equipment for control technology and laboratory use – EMC requirements

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Characteristic Values

LCD panel

Display	7-segment characters
Number of places	4-place, 4000 digits
Refresh rate	400 ms (2.5 x/s)

Key

rdg.	Measured value (reading)
d	Digits

Current Measurement via Clip-On Ammeter, A AC/DC

Measuring Range	Resolution	Intrinsic Error under Reference Conditions	Overload Capacity	
			Value	Time
0.20 ... 39.99 A _{RMS}	10 mA	1.5% rdg. + 10 d		
40.0 ... 399.9 A _{RMS}	100 mA	1.5% rdg. + 2 d		
400 ... 600 A _{pp}	1 A			

AC frequency range: 45 to 65 Hz (reference range)

Voltage, V AC/DC

Measuring Range	Resolution	Intrinsic Error under Reference Conditions	Overload Capacity	
			Value	Time
0.2 ... 39.99 V _{RMS}	10 mV	1.0% rdg. + 5 d	600 V AC/DC	Cont.
40.0 ... 399.9 V _{RMS}	100 mV	1.0% rdg. + 2 d		
400 ... 900 V _{pp}	1 V			

AC frequency range: 45 to 65 Hz (reference range)

Input impedance: 1 MΩ

Continuity Testing Ω (acoustic, programmable threshold up to 40 Ω)

Measuring Range	Resolution	Intrinsic Error under Reference Conditions*	Overload Capacity	
			Value	Time
0.0 ... 399.9 Ω	0.1 Ω	1.0% rdg. + 2 d	500 V AC/ 750 V DC/V _{pp}	Cont.

* With compensation for measurement cable resistance

Open-circuit voltage: ≤ 3.2 V

Test current: 320 μA

Resistance Measurement Ω

Measuring Range	Resolution	Intrinsic Error under Reference Conditions ¹	Overload Capacity	
			Value	Time
0.0 ... 399.9 Ω	0.1 Ω	1.0% rdg. + 2 d	500 V AC/ 750 V DC/V _{pp}	Cont.
400 ... 3999 Ω	1 Ω			
4.00 ... 39.99 kΩ ²	10 Ω			

¹ With compensation for measurement cable resistance

² METRAClip72 only

Open-circuit voltage: ≤ 3.2 V

Test current: 400 Ω range: 320 μA
4/40 kΩ range: 40 μA

Semiconductor Test

Measuring Range	Resolution	Intrinsic Error under Reference Conditions	Overload Capacity	
			Value	Time
0.000 ... 3.199 V	1 mV	1.0% rdg. + 2 d	500 V AC/ 750 V DC/V _{pp}	Continu- ous

Test Current: 2 mA to 4 mA depending upon measured voltage

Inrush Function (METRAClip72 only)

This function makes it possible to track rapid current changes of the damped sinusoidal vibration type by measuring successive RMS values which are calculated over ½, 1, 2½, 5 and 10 periods based upon the largest calculated RMS value, and are refreshed by means of a half-wave.

Applications include:

- Measurement of starting current for electric motors
- Precise specification of fuses and protective circuit breakers (relationship between amplitude and signal time)
- Stressing components with a current overload

The range of applications is limited to industrial frequencies (15 to 70 Hz).

Accuracy 8% + 10 digits

Acquisition time 10 signal freq. periods (200 ms at 50 Hz)

Active Power W (METRAClip72 only)

Display Range	Measuring Range	Resolution	Intrinsic Error under Reference Conditions
4000 W	5 ... 3999 W	1 W	2.0% rdg. + 1 d
40 kW	4.00 ... 39.99 kW	10 W	
400 kW	40.0 ... 240.0 kW *	100 W	

* The range is limited to 240 kW for single-phase measurement (600 V x 400 A)

Power Factor PF (METRAClip72 only)

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
0.20 ... 0.49	0.01	2% rdg. + 2 d
0.50 ... 1.00		5% rdg. + 2 d

Frequency Measurement for V, A and W functions (METRAClip72 only)

Measuring Range	Resolution	Intrinsic Error under Reference Conditions
10.00 ... 39.99 Hz	0.01 Hz	4% rdg. + 1 d
40.0 ... 399.9 Hz	0.1 Hz	
400 ... 3999 Hz	1 Hz	
4.00 ... 19.99 kHz	10 Hz	

Frequency measurement is performed on the voltage signal in the power function.

Phase Sequence (METRAClip72 only)

Frequency range 47 to 53 Hz or 57 to 63 Hz

Allowable voltage range 50 to 600 V

Allowable phase shift ±10°

Allowable amplitude deviation 20%

Allowable harmonic component 10% for voltage

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Temperature Measurement (METRAClip75 only)

Meas.	Display Range	Measuring Range	Resolution	Intrinsic Error under Reference Conditions
Internal	400° C	-10 ... +50.0° C	0.1 °C 0.2 °F	±1.5° C ±2.7° F
	400° F	+15 ... +120.0° F		
Type K Thermo- couple	400° C	-50 ... +399.9° C	1° C	1% rdg. ±1.5° C 1% rdg. ±2.7° F
	400° F	-50 ... +399.9° F		
	4000° C	+400 ... +1000.0° C	1° F	
	4000° F	+400 ... +1832.0° F	1° F	

Reference Conditions

Ambient temperature	+23° C ±3 K
Relative humidity	45 ... 75%
Battery voltage	8.5 V ±0.5 V
Frequency of AC components in the signal	45 ... 65 Hz
Crest factor of the utilized alternating range	$\sqrt{2}$
Conductor position	Centered
Conductor diameter	≤ 5 mm
AC magnetic field	None
Electrical field	None

Power Supply

Battery	9 V, IEC 6LF22, 6LR61 or NEDA 1604
Service life	With alkaline manganese batteries: METRAClip72: 60 hours or approximately 20,000 measurements of 10 seconds each METRAClip75: 75 hours or approximately 25,000 measurements of 10 seconds each
Battery level indication	Blinking battery symbol: Less than 1 hour operating time remains Continuously displayed battery symbol: Battery requires replacement
Automatic shutdown	After 10 minutes

Electrical Safety

Safety class	II (total insulation) per IEC 61010-1/ EN 61010-1/VDE 0411-1
Overvoltage category	CAT III 600 V or CAT IV 300 V
Fouling factor	2
Nominal insulation voltage	600 V

Ambient Conditions

Operating temperature	0° C ... +50° C
Storage temperature	-40° C ... +70° C (without batteries)
Relative humidity	10 ... 90% at max. 40° C, no condensation allowed
Deployment	Indoors only
Elevation	to 2000 m

Electromagnetic Compatibility (EMC)

(per EN 61326-1, issue 97 + A1)

Interference emission	Class B
Interference immunity	- Electrostatic discharge: 4 kV direct contact, evaluation criterion B 8 kV atmospheric, evaluation criterion B - Radiation fields: 10 V/m, evaluation criterion A - Rapid transients: 1 kV, evaluation criterion B - Conducted interference: 3 V, evaluation criterion A

Mechanical Design

Protection	IP 40
Clip opening	Max. 26 mm dia.
Dimensions	W x H x D: 70 x 193 x 37 mm
Weight	Approx. 260 g

METRAClip72 and 75 Clip-On Multimeters

Standard Equipment, METRAClip72

- 1 clip-on multimeter with battery
- 2 measurement cables, each with contact protected plug and test probe, 1000 V/16 A CAT III
- 1 alligator clip
- 1 carrying pouch with holding strap
- 1 set operating instructions

Standard Equipment, METRAClip75

- 1 clip-on multimeter with battery
- 2 measurement cables, each with contact protected plug and contact protected test probe, 1000 V/12 A CAT III
- 1 adapter for type K thermocouple
- 1 carrying pouch with holding strap
- 1 set operating instructions

Carrying Pouch with Holding Strap



Order Information

Description	Type	Article Number
Handy, digital RMS clip-on meter for up to 400 A AC/DC, power, voltage, resistance, continuity and more, in blister pack, includes 2 measurement cables with test probe, 9 V battery, 1 alligator clip, operating instructions, in carrying pouch	METRAClip72	M312E
Handy, digital, RMS clip-on meter for up to 400 A AC/DC, temperature, voltage, resistance, continuity and more, in blister pack, includes 2 measurement cables with test probe, 9 V battery, 1 adapter for type K thermocouple, operating instructions, in carrying pouch (especially suitable for automotive technology)	METRAClip75	M312H
Accessories for METRAClip75		
Standard plug-in immersion sensor, type K thermocouple, to + 1100° C	Z3431-5	GTZ3431005R0001
Plug-in surface sensor, type K thermocouple, to + 850° C	Z3431-6	GTZ3431006R0001
High temperature plug-in sensor tape, type K thermocouple, to + 450° C	Z3431-7	GTZ3431007R0001
Flexible, insulated plug-in sensor, type K thermocouple, to + 250° C	Z3431-8	GTZ3431008R0001

Please refer to our *Measuring Instruments and Testers* catalog for additional information concerning accessories.

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