



1-800-517-8431

99 Washington Street
Melrose, MA 02176
Phone 781-665-1400
Toll Free 1-800-517-8431



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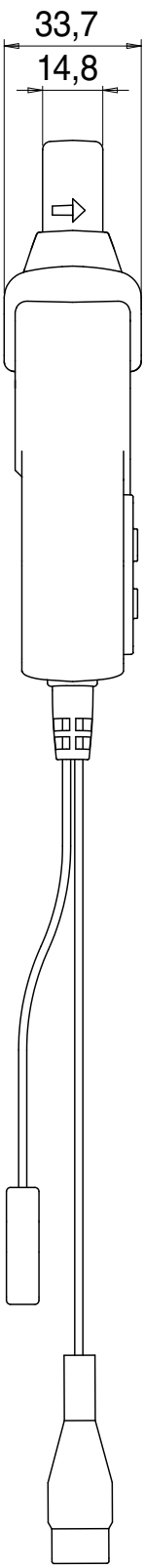
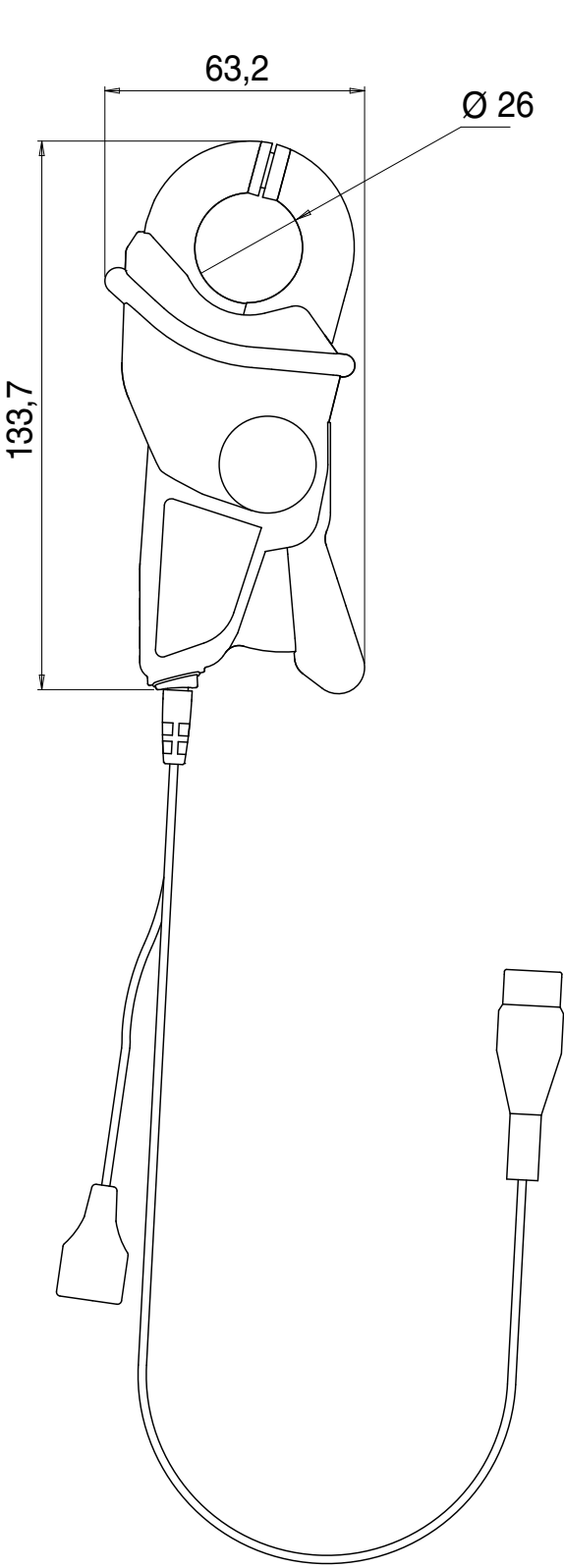
MH SERIES

The MH60 clamp is designed to measure DC and AC currents up to 1 MHz using dual Hall effect/Transformer technology.

It includes an internal NiMh rechargeable battery and can be recharged or powered using a 5 VDC power supply via the female type-B μ USB connector with which it is equipped.

It has an automatic standby system (which can be deactivated), an automatic "DCzero" system for compensation of magnetic and electronic drift, a switchable selective filter (3 kHz, 30 kHz) and a system for compensating the effects of the earth field and other constant DC fields.

Its ability to measure AC+DC signals is useful for True RMS measurements.



Current probe for AC/DC current

MH serie

Model MH60 (insulated AC/DC current probe)

Current	140 A peak
Output	10 mV/A

DESCRIPTION

The MH60 clamp is designed to measure DC and AC currents up to 1 MHz using dual Hall effect/Transformer technology.

ELECTRICAL SPECIFICATIONS

- Current range:**
0.5 .. 100 A DC (140 A peak)
- Output signal:**
10 mV AC+DC / A AC+DC (1 V at 100 A)
- Accuracy and phase shift ⁽¹⁾:**

Calibre	100 A			
Primary current	15 mA .. 0.7 A peak (10 mA .. 0.5 ARMS or DC)	0.7 A .. 90 A peak (0.5 A .. 64 ARMS or DC)	90 A .. 125 A peak (64 A .. 90 ARMS or DC)	125 A .. 140 A peak (90 A .. 100 ARMS or DC)
% Accuracy of output signal	NS	$\leq 1.5 \% + 100 \mu\text{V}$	$\leq 4 \%$	$\leq 5 \%$
Phase shift @ 50 Hz ⁽²⁾	NS	$\leq 1^\circ$	$\leq 1^\circ$	$\leq 1^\circ$

- Bandwidth:**
DC .. 1 MHz (-3 dB) (depending on current value)
- Rise time and fall time:**
From 10 % to 90 %
Without filter: 350 ns
With filter 30 kHz: 11.7 μs
With filter 3 kHz: 117 μs
- dI/dt @ 2 A peak-peak:**
5 A / μs
- Delay time @ 2 A peak-peak:**
0.35 μs typical
- Insertion impedance:**
 $\sim 0.25 \text{ m}\Omega$ @ 400 Hz
 $\sim 0.628 \text{ m}\Omega$ @ 1 MHz
- DC zero adjustment:**
 $\pm 3 \text{ A}$ by pushbutton
- Noise RMS:**
Without filter: 15 mA typical (< 88 mA peak-peak)
30 kHz filter: 5 mA typical (< 36.6 mA peak-peak)
3 kHz filter: 4 mA typical (< 35.8 mA peak-peak)
- Battery:**
Internal NiMH rechargeable battery + 5 VDC
external via female μUSB type B connection
- Battery life:**
8 hours typical with fully-charged battery
- Typical consumption:**
< 150 mA (battery charging)
- Low battery signal:**
Flashing green LED x 2 hours
- Overload indication:**
RED "OL" LED to indicate excessive measurement current

- Influence of temperature:**
-10 °C .. +45 °C: $\leq 1,200 \text{ }^\circ\text{C}$
+45 °C .. +50 °C: $\leq 2,200 \text{ ppm }^\circ\text{C}$
- Influence of conductor position in jaws:**
 $\leq 1.5 \%$ of output signal
- Common mode voltage (600 V max) for AC measurements (typical/max):**
at 50 Hz: 3.5 mA/5 mA @ 100 V
at 400 Hz: 25.9 mA/50 mA @ 100 V

MECHANICAL SPECIFICATIONS

- Clamping capacity:**
Cable: $\varnothing$ max 26 mm
- Max. jaw insertion capacity:**
 $\leq 90 \text{ }^\circ\text{C}$
- Output:**
Built-in cable 2 m long with moulded isolated male BNC plug
- Dimensions:**
138 x 49 x 28 mm
- Weight:**
200 g approx.
- Operating temperature:**
-10 °C to +50 °C
- Storage temperature:**
-20 °C to +50 °C
- Relative humidity for operation:**
0 to 85 % RH with a linear decrease above 35 °C
- Operating altitude:**
0 to 2,000 m
- Casing protection rating:**
IP 40 (EN 60529)

- Drop test:**
1 m (EN 60068-2-32)
- Shock resistance:**
100 g / 6 ms / half-period (IEC 68-2-27)
- Vibration resistance:**
10/55/10 Hz, 0.15 mm (IEC 68-2-6)
- Self-extinguishing capability:**
UL94 V2
- Colours:**
Casing: dark grey
Jaws: red

SAFETY SPECIFICATIONS

- Electrical safety:**
Instrument with double insulation or reinforced insulation between the primary the secondary and the grippable part located under the guard as per IEC 1010-1 & IEC 1010-2-032
- 600 V category II, pollution degree 2
- 300 V category III, pollution degree 2
- Electromagnetic compatibility (EMC):**
EN 50081-1: class B
EN 50082-2:
 - Electrostatic discharge (IEC 1000-4-2):
4 kV level 2 performance criterion B
8 kV in the air level 3 performance criterion B
 - Radiated field (IEC 1000-4-3):
10 V/m performance criterion A
 - Fast transients (IEC 1000-4-4):
1 kV level 2 performance criterion B
2 kV level 3 performance criterion B
 - Magnetic field at the network frequency (IEC 1000-4-8):
field of 400 A/m at 50 Hz: < 1 A

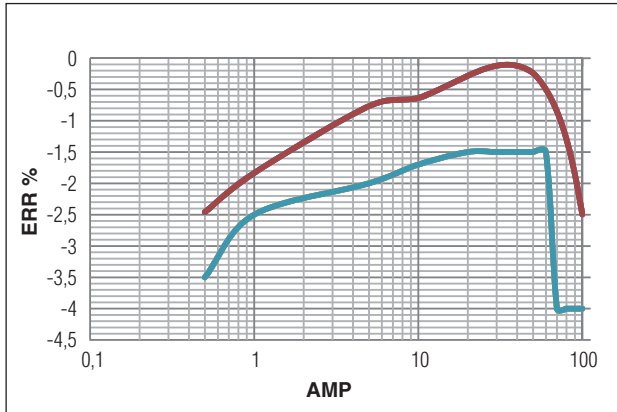
(1) Conditions of reference: 23 °C $\pm 5 \text{ }^\circ\text{C}$, 20 at 75 % RH, power supply voltage 5 V $\pm 5 \%$ V DC sinusoidal signal with frequency of DC at 400 Hz, external magnetic field < 40 A/m, no DC components, no external conductor with circulating current, conductor centred for measurement, load impedance > 1 M Ω / < 100 pF.

(2) without filter.

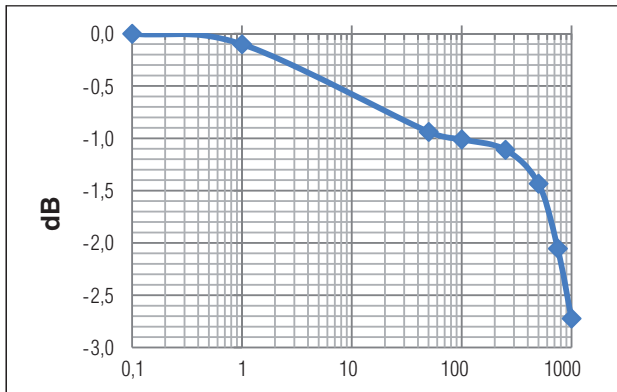
To order	Reference
AC/DC clamp model MH60 with a 100 V-240 V 50/60 Hz mains adapter, 1.5 A USB-A, type-A male USB ↔ type-B male μUSB cable 1.80 m long, verification certificate and 5-language user manual	P01120612

CURVES

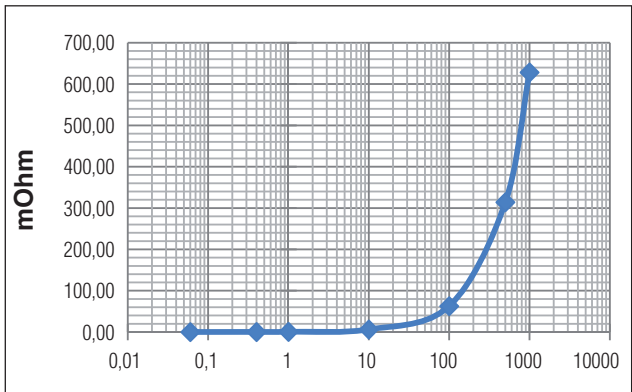
Linearity in DC 100 A calibre



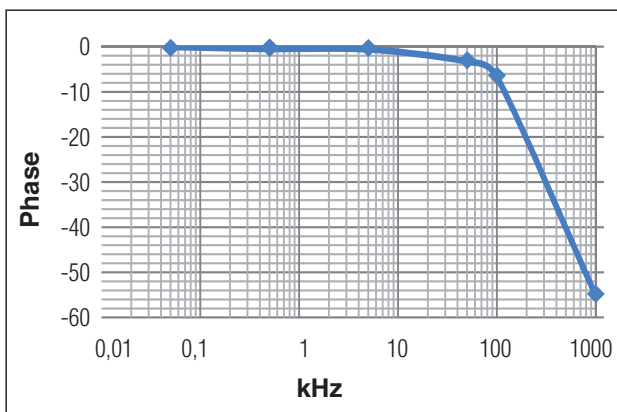
Frequency response to 0.5 A



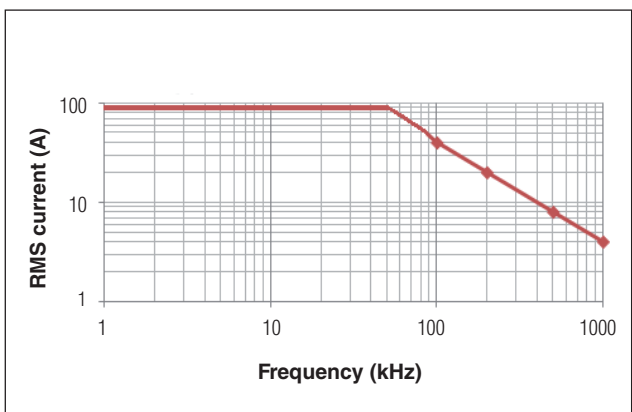
Insertion impedance



Phase shift at 3 A



Limitation of measurable current according to the frequency



Current clamp for AC/DC current

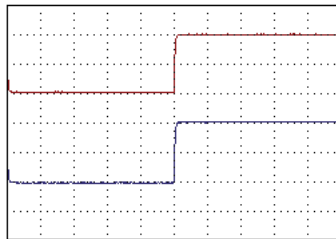
Model MH60 (insulated AC/DC current probe)

MH serie



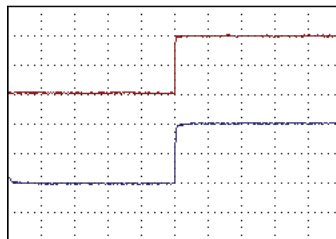
CURVES

1 A peak



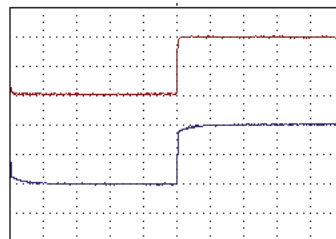
Input signal:
X: 1 ms/div
Y: 1 A V/div

Clamp output signal
X: 1 ms/div
Y: 1 A/div



Input signal:
X: 0.1 ms/div
Y: 1 A V/div

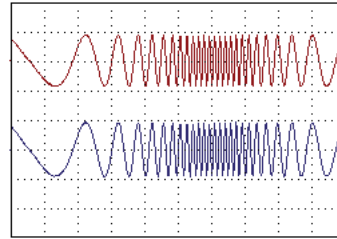
Clamp output signal
X: 0.1 ms/div
Y: 1 A/div



Input signal:
X: 20 μ s/div
Y: 1 A V/div

Clamp output signal
X: 20 μ s/div
Y: 1 A/div

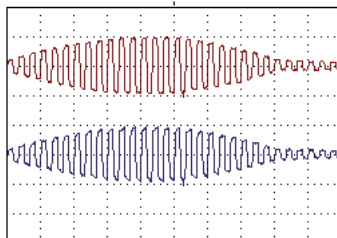
2 A peak



Input signal:
X: 5 ms/div
Y: 2 A/div

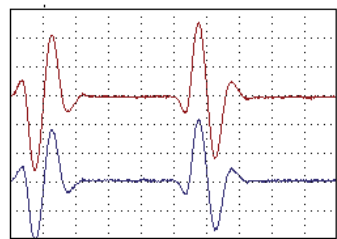
Clamp output signal
X: 5 ms/div
Y: 2 A/div

1 A peak



Input signal:
X: 50 μ s/div
Y: 1 A/div

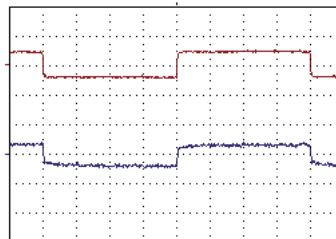
Clamp output signal
X: 1 μ s/div
Y: 1 A/div



Input signal:
X: 200 μ s/div
Y: 0.5 A/div

Clamp output signal
X: 200 μ s/div
Y: 0.5 A/div

0.1 A peak



Input signal:
X: 20 μ s/div
Y: 0.25 A V/div

Clamp output signal
X: 20 μ s/div
Y: 0.25 A/div

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