HEME ISO 1000, 2000

Current Clamp, Multimeter and Insulation Tester

Areas of application:

- Inspection of new electrical installations
- Maintenance of electrical equipment and installations
- Troubleshooting and repair of electrical equipment

Additional application capabilities of HEME ISO 2000:

- Documentation of multiple safety tests
- Detection of trends and intermittent faults

Description:

The HEME ISO series – is unique in providing 3 instruments in 1, a compact hand-held insulation tester, a TRMS current clamp and a TRMS multimeter.

This unique combination satisfies universal applications in:
Insulation measurement up to 20GΩ with test voltages of 100V, 250V, 500V and 1000V.
Low-resistance measurement according to IEC 61557 with a short-circuit current of >200mA, for applications with non-fused earth conductor connections and equipotential bus bars.
Fast continuity testing with selectable buzzer threshold between 0,2 Ω and 50 Ω and a maximum response time of 100ms meeting all test standards.
TRMS current and voltage measurement with display of AC, DC and AC+DC values to ensure safe and accurate measurement of distorted and complex waveforms common place in today's electrical systems.
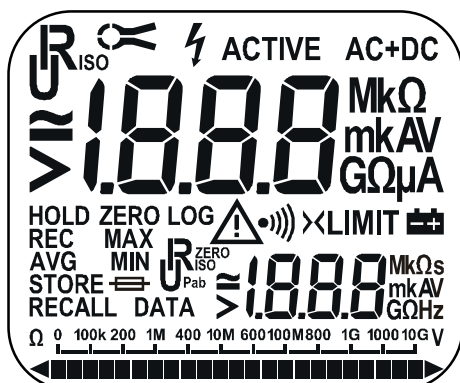
With various additional functions including ZERO (test lead null / relative), REC (Min, Max, Avg), LIMIT (Alarm) and SMART HOLD (hands free), the HEME ISO series sets new standards in all in one measurement technology providing convenience ease of use.

Main features:

- Easy to use handheld design measuring V, A, Ω, MΩ
- Large dual display with bright EL backlight, 17mm character size and bargraph
- General protection against external voltages without fuse damage
- Insulation measurements up to 20 GΩ with 100, 250, 500, 1000V DC test voltages and display of insulation test current
- Current measurement with 20 / 200 / 1000 A ranges for AC, DC and true RMS readings with dual display for frequency up to 1000Hz
- Voltage measurement with 2V / 20V / 200V / 600V ranges for AC, DC and true RMS readings with frequency measurement up to 1000Hz
- Resistance measurements ranges from 20Ω to 200kΩ with automatic 200mA test for low resistance and test lead compensation
- Continuity check with adjustable threshold and fast-responding buzzer
- LIMIT (alarm) to quickly and reliably identify fault conditions
- REC function for determining MIN, MAX, AVG values of resistance, current and voltage
- Intelligent auto power off to extend battery life

Additional features HEME ISO 2000:

- Simple storage of up to 350 insulation test results to internal memory with on screen viewing or PC download
- Intelligent SMART HOLD for hands free operation
- On screen calculation of the time dependant Polarisation Index and the Dielectric Absorption Ratio according to the national standard for determining insulation quality
- Extended current measurement up to 2000A
- Internal datalogging of current and voltage (up to 1000 readings) for trend and intermittent fault analysis
- External datalogging of insulation resistance to a PC with optional WINLOG software + interface

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TECHNICAL SPECIFICATIONS:

General:

Display: 1999 digit dual LC-display with special symbols, digit height 17 mm, 30 segment analogue bar with over- and underflow and special display sign, EL backlight

Temperature ranges:

Working temp.:	-10° C ...+50° C	(+14° F...+122° F)
Operating temp.:	0° C ...+35° C	(+32° F...+95° F)
Storage temp.:	-20° C ...+60° C	(-4° F ...+140° F)
Reference temp.:	+23° C ± 2° C	(+73° F ± 4° F)

Temperature coefficient of A:
$\pm$ 0.1% of rdg / K

Temperature coefficient of V, Ω, MΩ:
0.1 x operating error/K

Climatic class: B2 (IEC 654-1), -5° C..+45°C, 5%...85% RH, no dew

Operating altitude:
max. 2000m

Protection type: IP40 according to EN 60529

Safety: ☐ Protection by double insulation 600V CATIII pollution degree 2

Test voltage: 5550 V AC, measuring circuit to enclosure

EMC (Emission): IEC 61326-1/ EN 55011 class B

EMC (Immunity): EN 61000-4-2:8kV-class B, EN 61000-4-3: 3V/m-class A

Intrinsic error: Refers to the reference temperature range and is guaranteed for 2 years.

Operating error: Refers to the operating temperature range and is guaranteed for 2 years.

Quality system: developed, designed and manufactured according to DIN ISO 9001

External voltage: measurement inhibited for external voltage
Ux >10% of U_N for MΩ and >3V for R

Max. overload: 800 Veff RMS or
RMS x frequency < 5x10^4VHz
10kAeff RMS or
RMS x frequency < 4 x10^5AHz

Auxiliary power: 4 x 1,5 V mignon cells alkali-manganese (IEC LR6)

Battery life span: typical (no backlight) > 2000 measurements in MΩ. Battery life typically 100 hours continuous operation for resistance and voltage measurements, 60 hours in current

Fuse: 1,25A quick acting 600V 10kA / 32x6.3mm

Jaw opening: 60mm

Conductor: diameter max. 58mm

Dimensions: 300 x 98 x 52 mm (12 x 3.75 x 2 inches)

Weight: 0.8 kg / 1.8 lbs (including batteries)

Warranty: 2 years

Calibration interval:
2 years recommended

MΩ - R_{ISO} Insulation Resistance

Method: Voltage/current measurement as per EN 61557–2

Nominal test voltage:
U_N = 100V, 250V, 500V, 1000V DC

Open circuit voltage:
U_0 < 1.1 x U_N

Nominal current: $I_N \geq$ 1mA DC at U_N
$I_N \geq$ 2.5mA DC at 100kΩ at 250V

Short circuit current:
<10mA DC

Measuring range	Resolution	Operating error
1.8kΩ...2 GΩ	0.1kΩ...1MΩ	$\pm$(2% rdg+4D)
2GΩ...20GΩ	10MΩ	$\pm$(4% of rdg+4D)

Continuous measurement (log) and output via RS232 possible.

Display of the measuring current I_{ISO}.

Calculation of Polarisation Index I_P and Dielectric Absorption Ratio R_{ab}

R_{ab} after pre-defined time interval:

$$I_P= R_{ISO}(10min)/ R_{ISO}(1min)$$

$$R_{ab}= R_{ISO}(1min)/ R_{ISO}(30sec)$$

In case of external voltage of >10% of U_N the measurement is not started (safety interlock).

R – Low Resistance Measurement:

Method: Voltage/current measurement as per EN 61557–4

Open circuit voltage:
$U_0 \geq$ 4V

Short circuit current:
$I_k \geq$ 200mA DC up to 2Ω as per EN61557

Measuring range	Resolution	Intrinsic error
0.2Ω...20Ω	0.01Ω	$\pm$(1% of rdg+3D)
20Ω...200Ω	0.1Ω	
200Ω...2kΩ	1Ω	$\pm$(1% of rdg+2D)
2kΩ...20kΩ	10Ω	
2kΩ...200kΩ	100Ω	

In case of external voltages of >3V the measurement with 200mA is not started.

SMR Serial mode rejection approx. 60dB at 50 and 60Hz

CMR Common mode rejection approx. 80dB at 50 and 60Hz

Continuous measurement (log) and output through RS232 interface possible.

Continuity check:

Buzzer activated for external resistance within 100ms

Buzzer level adjustable with LIMIT function from 0,2...50Ω.

Test lead compensation (ZERO) from 0.01...5Ω.

V – TRMS Voltage Measurement

DC: Input resistance:1MΩ / 100pF

Measuring range	Resolution	Intrinsic error VDC
2V	1mV	±(3% of rdg+10D)
20V	10mV	
200V	100mV	±(2% of rdg+2D)
600V	1V	

SMR	Serial mode rejection approx. 60dB at 50 and 60Hz for DC (influence of AC signals to DCV-display)
CMR	Common mode rejection approx. 80dB at 50 and 60Hz

Auto range setting time:
1.5s
Max. voltage frequency product:
5×10^4 VHz

Over-range up to 1000V with flashing ⚡ symbol.

AC: Specifications valid for AC RMS >5% of range

Measuring range	Resolution	Intrinsic error VAC 15Hz – 1kHz
2V	1mV	±(3% of rdg+20D)
20V	10mV	±(2% of rdg+5D)
200V	100mV	±(2% of rdg+3D)
600V	1V	±(2% of rdg+2D)

Displayed values for voltage measurements: AC, DC and AC+DC+F. Crest factor 3 for values at the end of the ranges V_{peak} : $1200V_P$.

Over-range up to 800V with flashing ⚡ symbol.
Continuous logging and output through RS232 interface possible.

F - Frequency Measurement (in A and V)

Measuring range	Resolution	Intrinsic error
200Hz	0.1Hz	±(0.2% of rdg +3D)
1kHz	1Hz	

Method: Evaluation of zero crossings in signal
Temperature coefficient < 50ppm, sensitivity > 10% of voltage and current range end value

A – TRMS Current Measurement

Automatic auto zero during power ON and selection of function.

Clamp symbol in LCD activated.

Measuring range	Resolution	Intrinsic error
20 A (min. 0.7A)	10mA	±(1.5% of rdg+0.5A)
200 A	100mA	±(1.3% of rdg+2D)
2000 A	1A	

Specifications valid for AC RMS >5% of range

Displayed values for current measurements: AC, DC and AC+DC+F

SMR	Serial mode rejection approx. 60dB at 50 and 60Hz for DC influence of AC signal to displayed value in DC function
CMR	Common mode rejection approx. 80dB at 50 and 60Hz influence of AC signals to displayed value in AC or DC function

Auto range setting time:
2s
Measuring range:0 - 2000A DC or AC peak

Frequency range:DC,15Hz to 1kHz at ACRMS

Crest factor: 3

Maximum overload   10,000A or
ACRMS x frequency < 400,000 AHz

ACRMS is a True RMS measurement.

Continuous logging and output via RS232 interface possible.

Current compensation (ZERO) possible.

WINLOG V3.0 – PC Software for HEME ISO 2000

The option WINLOG V3.0 is an easy to use windows software and interface package for data download and data logging applications with the HEME power clamps and with the HEME ISO 2000. The software can be used to continually log the electrical measurements displayed on the instrument or to download stored data to a PC for further analysis.

- Easy to use Windows format allowing the download of both logged data and saved screens as well as online data logging of up to 2 parameters

- Download and display of saved screens (multiple parameters) and presentation in clear table format

- Download of logged data and display in chart and table formats

- Simple data export to other applications for report generation

With HEME power clamps WINLOG V3.0 can also be used for power quality and harmonics analysis.
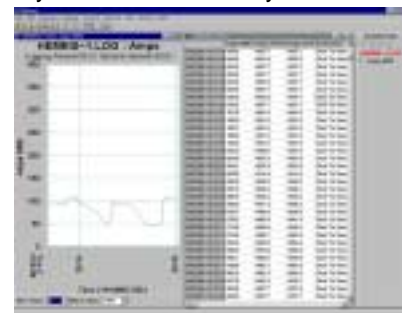
Designation	Order-No.

HEME ISO 1000
  incl.   2 safety measuring leads with
  test prods, 1 alligator clip, 4 batteries
  1,5V, operating instructions, 1 pouch
  with carrying belt
	SI9100Z

HEME ISO 2000
  incl.   2 safety measuring leads with
  test prods, 1 alligator clip, 4 batteries
  1,5V, operating instructions, 1 pouch
  with carrying belt
	SI9301Z

Optional accessory	

PC-software WINLOG V3.0
  incl. 3,5" floppy disk, 1 special RS232
  interface cable, operating instructions.
	60.98.69.010.0

Distributor

LEM NORMA GmbH
Export department
Palmersstrasse 2
A-2351 WIENER NEUDORF
TEL: +43(0)2236 691 0
FAX: +43(0)2236 63 080
E-mail: lno@lem.com

BELGIUM & LUXEMBURG
LEM Belgium sprl-bvba
Route de Petit-Roeulx, 95
B-7090 BRAINE-LE-COMTE
TEL: +32(0)67 55 01 14
FAX: +32(0)67 55 01 15
E-mail: lbe@lem.com

GREAT BRITAIN & IRELAND
LEM UK LTD
Geneva Court
1 Penketh Place
West Pimbo
Skelmersdale, Lancashire WN8 9QX
TEL: +44(0)1 695 72 07 77
FAX: +44(0)1 695 50 704
E-mail: luk@lem.com

NAFTA
LEM Instruments Inc.
23822 Hawthorne Boulevard #100
US-TORRANCE, CA 90505
TEL: +1 310 373 09 66
FAX: +1 310 373 90 56
E-mail: liu@lem.com

NETHERLANDS
LEM Nederland B.V.
Rijzendeweg 5
NL-4634 TV WOENSDRECHT
TEL: +31(0)16 46 154 62
FAX: +31(0)16 46 166 06
E-mail: lne@lem.com