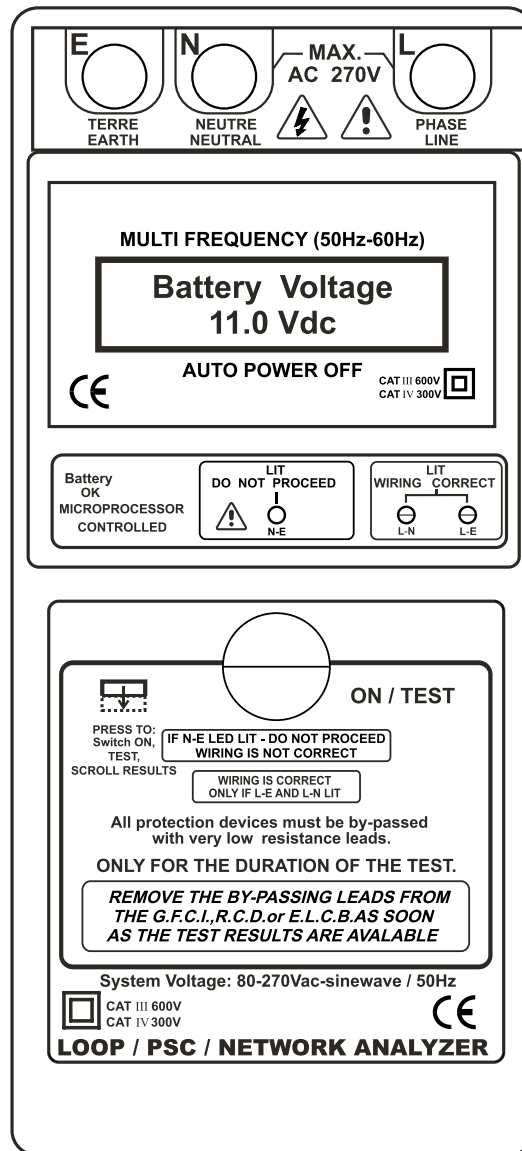


ELECTRICAL MULTIFUNCTION NETWORK ANALYZER, LOOP, PSC and EARTH TESTER



INSTRUCTION MANUAL

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SAFETY PRECAUTIONS

Electricity can cause severe injuries, even with low voltage or current. Therefore, it is extremely important that you read the following information before using your Electrical Network Analyzer. Electrical circuits are dangerous and lethal through lack of caution or poor safety practice. Follows Safety rules to reduce danger and practice safety.

- Read the User's manual carefully and completely before using the tester. Fully understand the instructions before using this product. Follow the instructions for every test. Take all the necessary Precautions. Do not exceed the limits of this instrument.
- Do not touch any exposed wiring, connections or other "live" parts of an electrical circuit.
- We will not accept liability for any damage or injury caused by misuse or non compliance with instructions and safety procedures. This instrument Inject a High Current into the Earth.
- This instrument is only intended for Single Phase operation 230Vac $\pm 20\%$ with the correct wiring (Phase, Neutral and Earth) -50Hz-.
- It must never be connected Phase to Phase. Damages could result. when Conducting a test, do not touch any exposed metal parts or any conducting parts.
- **All RCCB, GFCI and ELCB in the circuit to test must be bypassed ONLY for the duration of the test.**
- Never open the Tester, except for battery replacement.
- Before use, always inspect the tester and test leads for any sign of abnormal condition or damage. If any abnormal conditions exist (broken test leads, cracked case, display faulty etc....) do not attempt to Take any measurement or use the tester.
- Pay attention to cautions and warnings which will inform you of potentially dangerous procedures.
- **This instrument should only be used by a competent, suitably trained person which understand fully this test procedure. Personal should be trained regularly. Use Protective gear.**



Caution, risk of electric shock.



Caution, refer to the user's manual.

GENERAL DESCRIPTION

The Electrical Network Analyzer consists of two internal current injection devices, current and voltage measurement circuits and a microprocessor connected to a display.

Once the user depresses the button, power is applied to the tester's circuit.

The **ElecNetYzer** is a new type of **Multifunction Instrument** which test and report on all important components of a basic electrical network.

Conventionally, when you had to analyze an electrical network or find a fault quickly, the electrical engineer had to buy many bulky and expensive test instruments.

This latest release of the NEW Electrical Network Analyzer, solves that problem.

The **ElecNetYzer** has a built-in LED **wiring check** which checks the correctness of the wiring under test.

This microprocessor controlled, superb piece of equipment, has **one "Smart" push button** "does it all" type.

Press it to turn the instrument "ON", press it to **TEST**, press it to **SCROLL** through the results, press it to scroll through **PREVIOUS** results or press it to **START** another test.

.....It is so **simple to use** that you can **focus on Solving rapidly the electrical problem** instead of having to study the instruction manual.

Our Electrical Network Analyzer uses "**multiple paths high current injection**" for its test so that the measured values are well above network noise and high current injection is closer to reality.

Once the integrity of the wiring has been verified, the "Smart" button can be depressed.

The instrument will first measure the **voltage of the electricity supplier** (utility company) at the source. (V_e).

A **high current** is then injected between Line and Neutral from the point where the test is performed.

All the results (voltages and currents) from this measurement are stored in a RAM inside the microprocessor. Then, a high current is injected between Line and Earth from the same test point (fully automated, no input required from the user). Currents and voltages are again measured and stored. From now, the microprocessor has enough information to compute all the necessary results to display. The "Smart" button can be depressed to scroll through the relevant information and results.

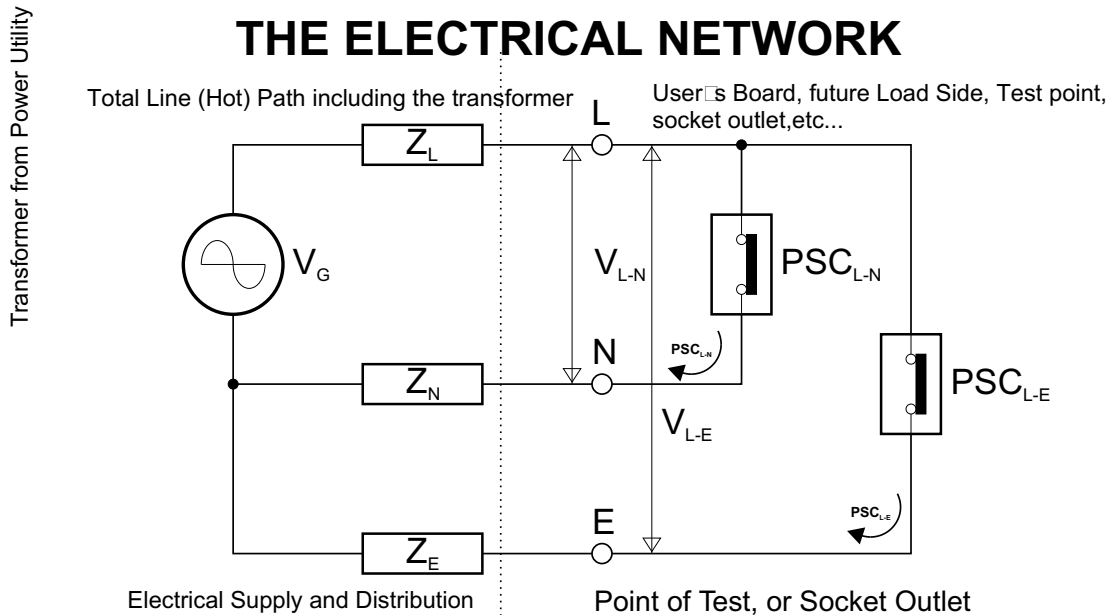
With the ElecNetYzer, the electrical engineer can quickly ascertain if the network is healthy or if a problem is present in the Line, Neutral or Earth path of the network.

The Earth path is measured and calculated without the need for poles or long wires.

The Earth path shown on the instrument is **exactly** what the earth current will be going through. ***Prospective Short Circuit Current and Loop Impedance between Line-Neutral and Line-Earth and all their components are shown.***

It is the first portable real electrical network analyzer. It has a **built-in Earth tester** which does not require the use of poles or long wires. This instrument is useful for fault-finding or commissioning of electrical installations. Differentiating between the Line (hot), Neutral and Earth(ground) path by reading their values has never been easier. Bad contacts, old wiring or bad earth path are quickly identified. Faulty electrical network can be resolved in a fraction of the time normally required using conventional equipment. Down time due to a faulty electrical network is minimal as the **fault can be identified and diagnosed quickly**. Find which wire needs to be attended to and why (find those old wires with high impedance before a fire starts and replace them). The complete electrical network can be analyzed by scrolling through the results. Of course, it has a **built-in Loop Impedance and Prospective Short Circuit tester as well as a Voltmeter.**

FAULT FINDING AND ANALYZING THE ELECTRICAL NETWORK



V_G = Voltage of the generator (supply transformer)
(internal impedance of transformer = X-Form)

Z_L = Impedance of the Line wire from the transformer, up to the test point (Z_L displayed by Instrument also includes X-Form). If this impedance is too high, check the connections of the Line wiring, check the quality of the line wiring and the switches / contacts in the line circuit.

Z_N = Impedance of the Neutral wire from the transformer, up to the test point. If this impedance is too high, check the connections of the Neutral wiring, check the quality of the line wiring and the switches or contacts in the Neutral circuit.

Z_E = Impedance of the Earth wire, including the Earth Impedance itself, as seen by the protection system.
Similar checking, specially at the bounding points should be done is this path impedance is too high.

Z_L = Line (Hot) wire impedance including the transformer impedance.

Z_N = Neutral wire impedance.

Z_E = Earth (Ground) path impedance including all the connections.

PSC_{L-E} , PSC_{L-N} = Prospective Short Circuit Current (L to N) & (L to E).

V_G = Electrical Network Supply Voltage Transformer (without Load).

V_{L-N} , V_{L-E} = Voltage between L-N & L-E (without Load).

Please note: Instrument accuracy depends on the stability of VG while testing.

BRIEF FEATURES

- **Built-In Earth Tester.**
- **Built-In Loop/Psc Tester .**
0.03-2000 Ω (Software Ctrl)
- **Built-In Voltmeter.**
- **Built-In Wiring Checker.**
- **One Push Button Smart Control.**
- **Display L-N and L-E voltages.**
50 to 280V AC (Sine)
- **Display Line Path Impedance.**
0.01-2000 Ω (Software Ctrl)
- **Display Earth Path Impedance.**
0.01-2000 Ω (Software Ctrl)
- **Display Neutral Path impedance.**
0.01-2000 Ω (Software Ctrl)
- **Display PSC Line to Neutral.**
6KA@230Vac supply
- **Display PSC Line to Earth.**
6KA@230Vac supply
- **Re-scroll trough previous results.**
- **Bat. OK / Low battery indicator.**
- **Auto-off function.**
- **Color coded test leads.**
- **Rugged Case.**
- **Ultra low power consumption.**

PREPARATION FOR USE

When unpacked, the tester should be inspected for any visible signs of damage. The test leads should be inspected for cracks, continuity or damages. Do not proceed with damaged leads. Press the ON button and make sure the batteries are in good condition (low battery will be indicated on the display and BAT OK led will not lit if batteries need to be replaced).

BEFORE TESTING ALWAYS CHECK THE FOLLOWING

- **System Voltage**
Your Electrical Network Analyzer is best intended to work with 230 Vac/50Hz. However, if the voltage is lower (or higher) than that, the test could still be done but accuracy of the PSC could deteriorate due to the fact that the current injected is lower than optimal. However, your tester can work on a wide range of voltage and compute results so that those changes have a minimal effect on results. If you are using a 220Vac system, your ElecNetYzer must be calibrated in our factory accordingly (see front panel of instrument).
- **ELCB / RCCB / GFCI /RCD**
It is necessary to bypass the ELCB / RCCB / GFCI for the duration of the Earth / Loop / Psc test .
- **Unplug all loads**
In order not to affect the measurement, it is advised to unplug all loads from the installation under test. If you do not disconnect loads, the results will take these loads into account and the displayed results may not be what you expect.
- **Make a clear sketch of the measurement to be able to interpret results accordingly and take the proper corrective actions if need be.**
- **Check leads before using Tester**
The leads quality and resistance is a factor influencing the accuracy of the results make sure they are always in good conditions .

SAFETY NOTES

Rated environmental conditions:

- (1).Indoor use.
- (2).Installation category II.
- (3).Pollution degree 2.
- (4).Altitude up to 2000 meters.
- (5).Relative humidity 80% max.
- (6).Ambient temperature 0°C to 40°C.

Observe the international electrical symbols listed below:



Warning ! risk of electric shock.



Caution ! refer to this manual before using the meter.

SPECIFICATIONS-ELECTRICAL

Loops / Earth / Wires	: 0.03-2000	Auto-ranging
Prospective Short Circuit	: 0 ~ 6KA @ 230Vac	
Operating Voltage	: 50-275Vac(50Hz only)	
Best Performance at Rated Voltage	: 230Vac ±20%	Max10A
Operating Temperature	: 0°C ~ 40°C	
Storage Temperature	: -20°C ~ 60°C	
Operating Humidity	: 80%	Maximum
Storage Humidity	: 85%	Maximum
Accuracy of Voltages	: ±1%(210-250V)	±3% otherwise
Accuracy Loops/Earth	: ±2%(0.05-50 Ω)	±3% 500
And Wires Impedances	: ±25%(above 500 Ω)	

GENERAL

Operating Temperature	: -15°C to + 50°C
Storage Temperature	: -20°C to + 65°C
Humidity	: 93% RH @ 40°C
Power Source	: 6 x AA battery
Dimensions	: 205(L) x 90(W) x 55(D)mm
Weight	: 540g(battery included)
Safety Standard	: IEC/EN 61010-1 CAT III 600V/CAT IV 300V EN 61326 EN 55011 EN 61000-3-3 EN 61000-4-2 EN 61000-4-3

FUNCTIONS

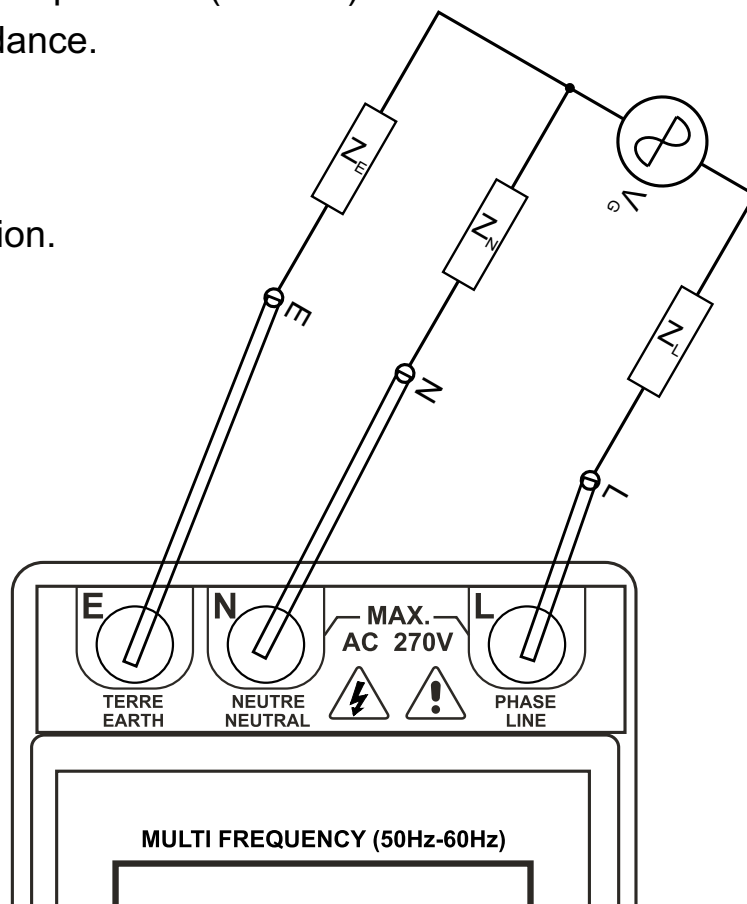
The tester Measures :

- Line - Earth AC Voltage.
- Line - Earth Loop Impedance.
- Prospective Short Circuit Current L-E.
(This is the current that flows between Line and Earth, should a short circuit be made between Line and Earth)
- Line - Neutral AC Voltage.
- Line - Neutral Impedance.
- Prospective Short Circuit Current L-N.
(This is the current that flows between Line and Neutral, should a short circuit be made between Line and Neutral)
- Earth Spike Impedance (Earth Wire).
- Line + Transformer Impedance (X-Form).
- Neutral Wire Impedance.
- Wiring Integrity.

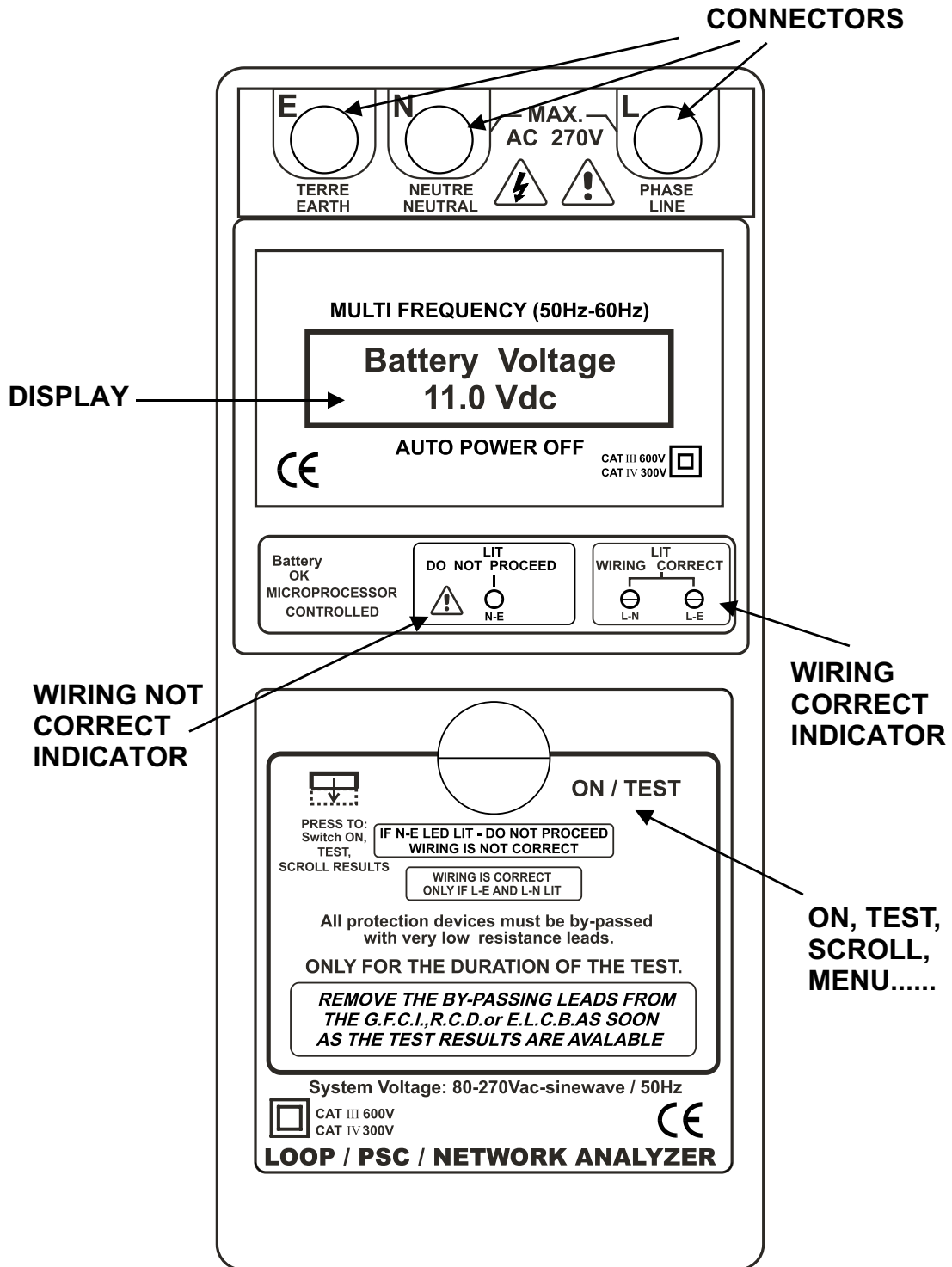
The tester report :

- Low battery indication.
- Bad wiring.
- No line.
- Over-temperature.

CONNECTIONS



INSTRUMENT LAYOUT



ANALYZING ELECTRICAL NETWORK AND THE FAULT

Turn Instrument ON by pressing "ON / TEST" .
The L.C.D. display will come to the following Screen.

**NETWORK ANALYZER
PRESS "TEST"**

Pressing "ON / Test" now will start the test. This Testing procedure is fully Automatic and Controlled by the Micro Processor

----- TESTING!-----

Main Voltage is indicating the voltage between L-N

V-> LINE-NEUTRAL
230.65V

Disconnect the Tester from the circuit under Test. From this first results, you can scroll trough the test results using the Test button.

Scroll trough the results again, if the tester is not connected to the circuit under test or do a new test by connecting the tester to the circuit under test.

V-> LINE-EARTH
228.93V

Z-> LINE-EARTH
0.89 Ω

Z-> LINE-NEUTRAL
0.43 Ω

PSC->LINE-NEUTRAL
536A

PSC->LINE-EARTH
257A

Z-> NEUTRAL WIRE
0.22 Ω

Z-> EARTH WIRE
0.68 Ω

Z-> LINE+XFORM
COIL 0.21 Ω

REPLACING THE BATTERIES

- The Tester continuously monitors the battery voltage and indicates when the battery need to be replaced.
- The tester's batteries are situated under the tester.
- Disconnect the test leads from the Instrument, remove the battery cover and the batteries.
- Replace with six 1.5V AA pen light batteries, taking care to observe correct polarity.
- Replace the battery cover.

The ElecNetYzer uses 6 x "AA" cells batteries. Remove the battery cover by unscrewing the 2 screws from the battery cover, then proceed to remove the old batteries. Replace all the batteries and ensure polarity is respected.

CALIBRATION & SERVICING

Both, calibration and servicing must be performed by a competent trained and approved person.

Contact your nearest authorized distributor about Calibration Certificate and Servicing .

Before returning the Instrument, ensure that :

- the leads have been checked for continuity and signs of damage.
- the batteries are in good condition.

LIMITED WARRANTY

We warrant the product manufactured by us to be free from defective material or factory workmanship and agree to repair or replace this product which, under normal use and service, disclose the defect to be the fault of our manufacturing, with no charge for parts and service. If we are unable to repair or replace this product, we will make a full refund of the purchase price.

Consult the user's manual for proper instruction regarding use of this instrument.

Our obligation under this warranty is limited to repairing, replacing or making refund of this test equipment which proves to be defective within forty eight months from the date of original purchase.

This warranty does not apply to any of our products which have been repaired or altered by unauthorized persons in any way so as, in our sole judgement, to injure their stability or reliability, or which have been subject to misuse, abuse, misapplication, negligence or accident or which have had the serial numbers altered, defaced or removed.

Accessories, not of our manufacture used with this product, are not covered by this warranty.

All warranties implied by law are hereby limited to a period of forty eight months, and the provisions of the warranty are expressly in lieu of any other warranties expressed or implied.

The purchaser agrees to assume all liability for any damages or bodily injury which may result from the use or misuse of the product by the purchaser, or it's user, his employees, or others, and the remedies provided for in this warranty are expressly in lieu of any other liability we may have including incidental or consequential damages.

We reserve the right to discontinue models at any time, or change specification, price or design, without notice and without incurring any obligation.

CLEANING AND STORAGE

Periodically wipe the case with a damp cloth and detergent : do not use abrasives or solvents.

If the meter is not to be used for periods of longer than 60 days, Remove the batteries and store them separately.

CAT IV - Is for measurements performed at the source of the low-voltage installation.

CAT III - Is for measurements performed in the building installation.

CAT II - Is for measurements performed on circuits directly connected to the low-voltage installation.

CAT I - Is for measurements performed on circuits not directly connected to Mains.

Due to our policy of constant improvement and development, we reserve the right to change specifications without notice.

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