



STANDARD

Test & Measuring Instruments

DIGITAL INSULATION TESTER (1kV below)

Model: 4152 IN - 4160 MF



4153 IN



4158 MF

- A new generation of Modern Digital MultiFunction Testers is born. These Testers have a range of new features not even found in Expensive Advanced Test Equipments.
- They are models 4152IN, 4153IN, 4154MF, 4155MF, 4156IN, 4157MF, 4158MF, 4159MF and 4160MF.
- All, not only Rugged, but designed to excel in Harsh environment, still, remaining low cost and affordable. They can be operated with rechargeable batteries, alkaline or low cost general purpose batteries.
- This Family of Originally Designed Unique Products have features ranging from Insulation Resistance Testing, Voltage (ac-dc) measurements with Automatic Hold facility, Diode Testing, Ohm Meter, Continuity Test with a short circuit current of minimum 220mA.
- Two very unique features are found on the Multifunction Models: MOV and Gas Testing.
- Today, most equipments and electrical installations are protected by MOVs and Gas arresters. Our new family of testers can test these devices to establish if the devices are still operating correctly or not.
- Energy conservation is featured on all these new Advanced Products. The Quick Test button run the test while its depressed, automatically stopping if the key is not pressed.
- EnerSave™ limit the test duration to about 10 Seconds.
- Quick Test and EnerSave™ are unique features. Both save energy.
- This new generation of test equipments have no moving parts. All calibration are saved internally in a non volatile memory. Calibration can be done at any calibration facility around the world, without the need for dedicated calibration equipment. This makes these products easier to maintain and lower the cost of calibration. Their calibration interval can be extended without much problem. They comply to all the latest regulations, including UK.
- This product family is part of our new World Class series.
- Meets IEC/EN 61010-1 CAT III 600V

FEATURES COMPARISON

Model	4152IN	4153IN	4154MF	4155MF	4156IN	4157MF	4158MF	4159MF	4160MF
Digital EE Calibration (No Potentiometers)	■	■	■	■	■	■	■	■	■
Keypad Operation	■	■	■	■	■	■	■	■	■
Automatic Voltmeter AC/DC at Start / Reset	■	■	■	■	■	■	■	■	■
ON-Reset/Restart Key	■	■	■	■	■	■	■	■	■
Off Push Button	■	■	■	■	■	■	■	■	■
Auto-Off	■	■	■	■	■	■	■	■	■
MOV / Protection Devices Test	■	■	■	■	■	■	■	■	■
Quick Test (Test While Press Quick Test)	EnerSave™	■	■	■	■	EnerSave™	EnerSave™	EnerSave™	EnerSave™
Test ON-OFF	■	■	■	■	■	■	■	■	■
Guard Terminal for Precision High Resistance Test	■	■	■	■	■	■	■	■	■
Polarization Index (PI) on 250, 500 and 1000V	■	■	■	■	■	■	■	■	■
Dielectric Absorption Ratio (DAR) on 250, 500 and 1000V	■	■	■	■	■	■	■	■	■
Battery Test by Key	Test Battery at Start	■	■	Test Battery at Start	Test Battery at Start	Test Battery at Start	Test Battery at Start	Test Battery at Start	Test Battery at Start
Battery Test at Switch ON / Reset	■	■	■	■	■	■	■	■	■
Voltmeter on request by Keypad	Automatic	■	■	■	■	■	■	■	■
Safety Voltmeter before each Test	■	■	■	■	■	■	■	■	■
Auto-Discharge on all Test and all Ranges	■	■	■	■	■	■	■	■	■
Continuity Short Circuit Current >220mA (225mA Typical)	■	■	■	■	■	■	■	■	■
Continuity Open Circuit Voltage of 5V dc	■	■	■	■	■	■	■	■	■
Nominal Voltage @ 1mA on all Insulation Ranges	■	■	■	■	■	■	■	■	■
Buzzer ON/OFF by Key	Always ON	■	■	■	■	■	■	■	■
Leads Auto-Null Key	■	■	■	■	■	■	■	■	■
Test Auto-Stop	■	■	■	■	■	■	■	■	■
Display Customization for OEM	■	■	■	■	■	■	■	■	■
Re-programmable Microprocessor for Easy Updates	■	■	■	■	■	■	■	■	■
Can be calibrated in ALL calibration laboratories	■	■	■	■	■	■	■	■	■
Insulation measurement from 2kΩ (250V range) to 8GΩ (1kV Range)	■	■	■	■	■	■	■	■	■
Continuity from 0.01Ω (220mA) to 1999Ω	■	■	■	■	■	■	■	■	■
DC Voltmeter from 1Vdc to 950Vdc	■	■	■	■	■	■	■	■	■
AC Voltmeter from 1Vac to 700Vac	■	■	■	■	■	■	■	■	■
Ohm Meter 400kΩ resistance range	■	■	■	■	■	■	■	■	■
Diode Test @ 1,1 to 1,2mAdc	■	■	■	■	■	■	■	■	■
Accept 8 Rechargeable Batteries or Alkaline or Normal	■	■	■	■	■	■	■	■	■
Smart Hold & Stop on Voltmeter ac / dc	■	■	■	■	■	■	■	■	■
Gas Arrester Function	■	■	■	■	■	■	■	■	■
EnerSave™	■	■	■	■	■	■	■	■	■

SPECIFICATIONS

Insulation Test	INSULATION TESTERS	MULTIFUNCTION TESTERS
Test Voltage (DC V)	250V/500V/1000V	250V/500V/1000V
Output Voltage @ 1mA	Reted test Voltage +10% Max	
Measuring Ranges	2K-2G/4K-4G/8K-8G Ω	2K-2G/4K-4G/8K-8G Ω
Accuracy	<30kΩ:±20%rdg 30kΩ-1MΩ:±5%rdg >1MΩ:±3%rdg	<30kΩ:±20%rdg 30kΩ-1MΩ:±5%rdg >1MΩ:±3%rdg
When Voltage is constant, Current is Limited at	±1.2mA	±1.2mA
Short Circuit Current	±4mA Max	±4mA Max

Continuity Test	INSULATION TESTERS	MULTIFUNCTION TESTERS
Measuring Ranges	0.01-1999Ω	0.01-1999Ω
Accuracy	0.01-100Ω : ±1.0% rdg 100-300Ω : ±1.5% rdg 300-1999Ω : ±2.0% rdg	0.01-100Ω : ±1.0% rdg 100-300Ω : ±1.5% rdg 300-1999Ω : ±2.0% rdg
Short Circuit Current	> 220mA	>220mA
Open Circuit Voltage	5V dc	5Vdc
Resolution	±2 counts	±2counts

Voltmeter	INSULATION TESTERS	MULTIFUNCTION TESTERS
AC Voltage(Auto)	0-700V	0-700V
DC Voltage(Auto)	0-950V	0-950V
Accuracy	±1.5% of F.S.	±1.5% of F.S.
Resolution	±1V	±1V

MOV Test	INSULATION TESTERS	MULTIFUNCTION TESTERS
Test Voltage	—————	5-1020Vdc
Voltage Result Accuracy	—————	±3%
Voltage Result Resolution	—————	±2 counts

GAS Arrester Test	INSULATION TESTERS	MULTIFUNCTION TESTERS
Test Voltage	—————	5-1020Vdc
Voltage Result Accuracy	—————	±3%
Voltage Result Resolution	—————	±2 counts

Diode Test	INSULATION TESTERS	MULTIFUNCTION TESTERS
Test Voltage	—————	5 Vdc
Max Test Current	—————	1.5mA
Resolution	—————	0.1V
Measurement Voltage	—————	0-4.5V
Accuracy	—————	3%
Resolution	—————	±2 counts

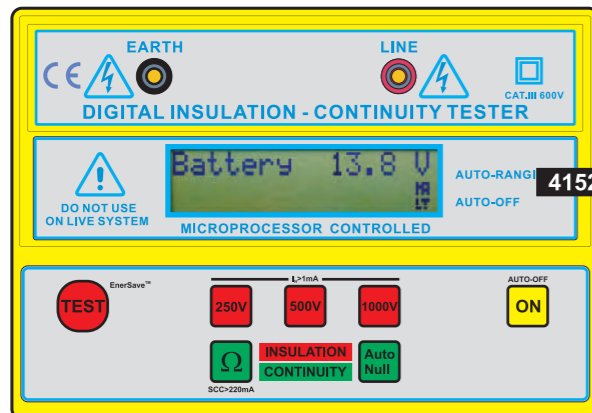
Protections	INSULATION TESTERS	MULTIFUNCTION TESTERS
Over Load	700V (between all terminals)	
Over Voltage	Class III-700V towards ground	
Fuses	1 X 500mA, 5 x 20mm, HBC, 600 Fast Blow	

General	INSULATION TESTERS	MULTIFUNCTION TESTERS
Display	2 lines x 16 characters LCD	
Auto-Null Threshold	5Ω	
Buzzer Threshold	3Ω	
Fast Test	10Sec	
Long Test	60Sec	
With PI and DAR test Function	10Min	
Load Battery Test Corrent	About 300mA	
Power Source	1.5 x 8 (Type alkaline)	
Dimensions	250(L) x 190(W) x 110(H)mm	
Weight	1460g Approx. (battery included)	
Operating Temperature	1 °C to 55 °C not in full sun	
Storage Temperature	-20 °C to 70 °C	
Accessories	Test leads (TEL-AL11-A) Instruction manual	Shoulder belt Batteries



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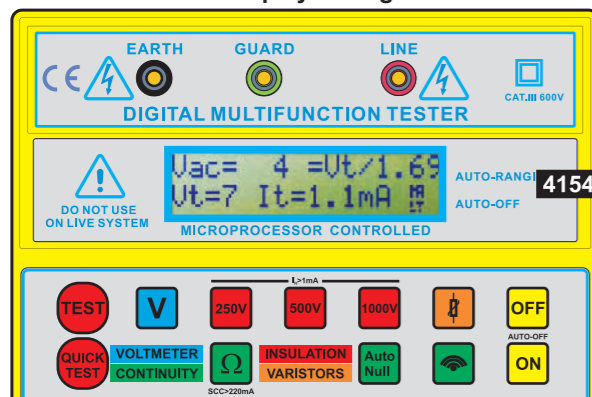
DIGITAL INSULATION TESTER (1kV below)



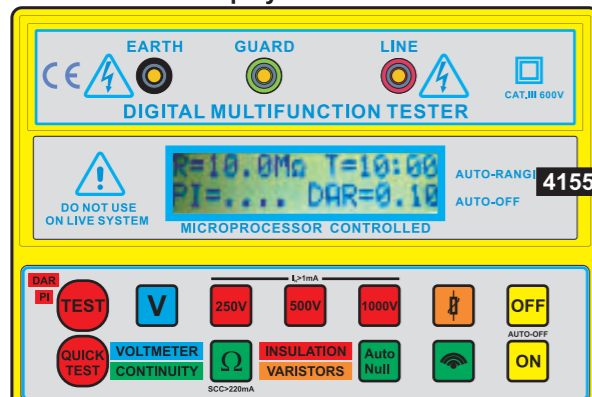
4152IN showing the Battery test during start up.



4153IN interactive display asking to connect leads.



4154MF display of MOV test results.



4155MF display of PI and DAR test results.

ON → When Depressing the "ON" Button, the Instrument starts up or Resets.

AUTO-OFF → If after a test, no key is depressed for ± 5 minutes, the Instrument will switch off automatically.

OFF → You can turn OFF the Tester without the wait for Auto-off. Press Off to switch OFF the Tester immediately. If a test is still in Progress, pressing OFF will stop the test. In this case you need to press off again.

BAT. → Depressing the "BAT" key will automatically draw current from the batteries. While current is drawn, the total battery voltage is measured and displayed. On models without this key, this feature is automatically executed at startup. Please note that battery voltage is always monitored during use of the instrument.

V → Ac and Dc voltages are automatically detected and shown. This is the default function of the Instrument. The Voltmeter is selected by default by the Instrument. The voltmeter is activated before any test start and the user must connect the test leads to any circuit before starting any test. This ensure complete safety to the user and the Instrument. Should voltage be present on the circuit under Test, this **SAFETY VOLTMETER** will warn the user of the danger.

AUTO HOLD → As **ADDED SAFETY**, this Auto-Hold helps the user taking measurement without watching the display. The user can focus instead, on it's hands and test leads. While AUTO-HOLD is enabled, the tester will automatically HOLD the last valid reading, which mean that when the user touch a voltage, that voltage is held on the display even after un-touching the voltage. This add great safety for the user as he can focus on it's safety by only looking at the test leads.

▶ → This Test inject a current (about 1mA) into the diode and measure the Forward Voltage on it's terminals. Voltage which can be measured is 0 to 5V.

250V 500V 1000V → Insulation test Voltage selection is done by Depressing the corresponding key.

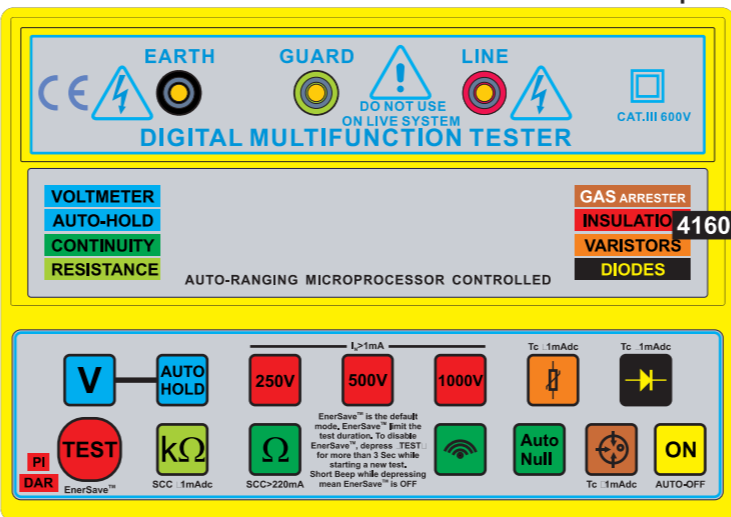
TEST → Depress to Start or Stop the Selected Test

EnerSave™ → EnerSave™ is a Smart Program which Save Energy when ever possible by limiting the Test Duration.

QUICK TEST → Test is performed while this key is depressed and stop when released. Models with this key do not have EnerSave™ because they don't need it.

DAR → This is the ratio of the Insulation Resistance at 1 Min divided per the Insulation Resistance at 30 Seconds.

PI → This is the ratio of the Insulation Resistance at 10 Min divided per the Insulation Resistance at 1 Minute.



4160MF during voltage measurement with Auto-Hold

MOV → This Key select the MOV Test. Today's new Equipments and Electrical Installations are generally Protected by MOVs. It is now easy to test these devices to ensure their proper working and replace them if found damaged. The knee Voltage is shown on the display.

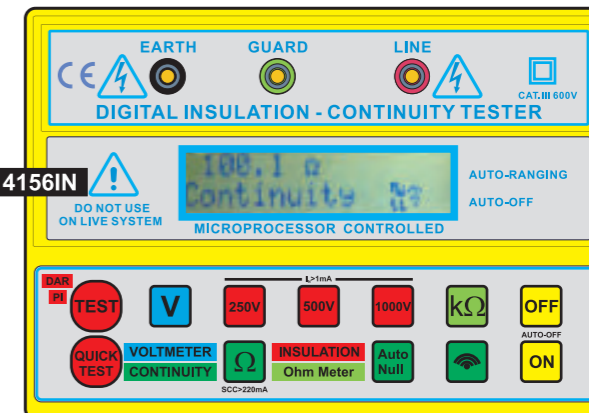
Gas Arrester → The Trigger Threshold Voltage is shown on the LCD. All Gas protection can be Tested, including Neon Lights.

Ω → Select the Continuity test which has a Short Circuit Current of 220mA. Complies to all latest standard.

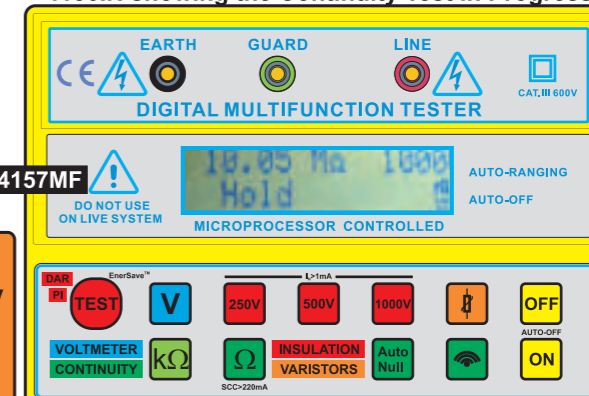
Auto Null → Auto-Null the resistance of the test leads and of the fuse so that continuity measurements can show only the resistance under test.

Buzzer → Turn Buzzer On or Off. When ON, low resistance value BEEP when low. It's helping when tracing circuitry.

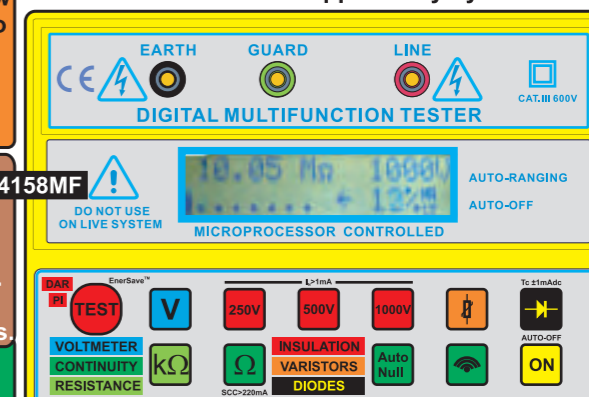
kΩ → Select the Ohm Meter which has a Short Circuit Current of ±1mA. It can measure up to 400K Ohms.



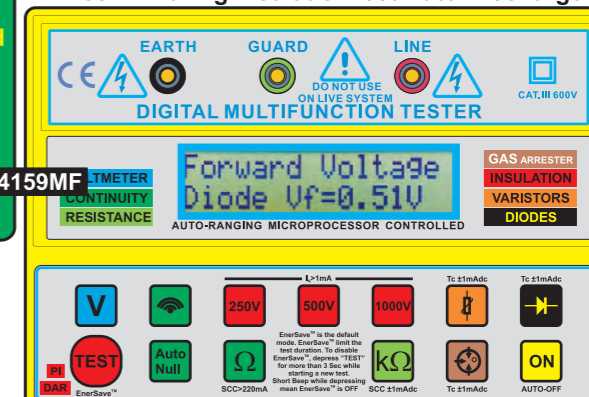
4156IN showing the Continuity Test in Progress



4157MF Insulation Test stopped early by EnerSave™



4158MF During Insulation Test Auto-Discharge



4159MF During diode test

All Functions are using an easy "human minded" interface