

M1110A

# Neutral Supply Tester (NST)



## FEATURES

**NST carries out automatic internal self checks to ensure correct functionality of the M1110A instrument.**

**Ensure that Active and Neutral conductors are correctly identified with reference to operator supplied earth before connection to premises.**

**Measures volts and impedance in relation to the connected Active, Neutral and reference Earth to determine a safe or unsafe condition.**

**Indicate via LED's and audible alarm the safe (Pass) or unsafe (Fail) connection to the M1110A.**

## OVERVIEW

Dewar model M1110A Neutral and Supply Tester was designed in conjunction with Power companies to ensure the incoming Active and Neutral power connections to customer's premises are correctly identified and safe to use before a power connection is made.

The M1110A is a compact hand held unit housed in a lightweight heavy-duty case. The M1110A is a self powered passive device. Power is taken directly from the user's connections to the IEC connector. The front panel has 5 LED indicators. An audible alarm is fitted internally as a secondary indicator to indicate a failure. These indicators will show the safety status of the connection.

## OPERATION

Electrical connection is made to the M1110A via an inbuilt IEC320 connector.

The testing cycle is instigated automatically when the appropriate wiring connection is made to the M1110A. The M1110A has no user selections to instigate testing. The M1110A is designed to automatically start checking as soon as power is applied. If the neutral to active impedance is out of tolerance the unit will indicate a fail and further testing will cease to occur, indicating the failure mode.

## TESTS PERFORMED

### Self Check

1. Applied voltage greater than 150 VAC and no internal self test failure is a pass.
2. Applied voltage less than 150 VAC or an internal self test failure is a fail.

A failure at "Self Check" will be indicated by three flashing red LED's plus an audible alarm. Further testing cannot proceed. After a successful internal self check, live testing of the power lines will automatically proceed.

### Live Test Performed

- |  |                   |
|--|-------------------|
| 1. Active to Neutral voltage less than 195VAC.                       | Indicates a fail. |
| 2. Active to Neutral voltage greater than 277VAC.                    | Indicates a fail. |
| 3. Neutral to Earth voltage greater than 5.25VAC.                    | Indicates a fail. |
| 4. Earth impedance greater than 10K ohm.                             | Indicates a fail. |
| 5. Neutral to Earth voltage is greater than Active to Earth voltage. | Indicates a fail. |
| 6. Active to Neutral impedance greater than 1 ohm, +/-5%             | Indicates a fail  |

A failure in 1, 2,5 and 6 of the above live tests will result in one red LED being illuminated plus an audible alarm.

A failure in 3 and 4 of the above live tests will result in two red LED's flashing plus an audible alarm.

Failure of any tests will be indicated by one of any red LED indicator being illuminated

Pass is indicated by continuous illumination of " Ready/Pass" green LED.

## Warranty 12 Months

No undertaking is made or implied that the product is suitable for any particular application.

Dewar reserves the right to make changes to its product at any time to improve reliability, function, design or manufacture.

Dewar Electronics Pty. Ltd. standard terms and conditions apply and are available on request.

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When the M1110A is connected to power, the unit performs internal self checks, checks the voltages connected to the unit and the active to neutral impedance is measured to ensure less than 1.0 ohm impedance. (accuracy +/-5%)

Greater than one ohm indicates a failure.

Failure is indicated by a continuously illuminated red LED and an audible alarm.

Safe to proceed is indicated by the continuous illumination of both the "power" LED indicator and the green "Safe to Proceed" LED indicator and no audible alarm.

Failure of any tests will be indicated by one of any red LED indicator being illuminated

## **Electrical Specification**

### **Input Operating Voltage**

150 to 550 VAC, (2  $\phi$ . 2 x 240V +10%) measured between any combination of the Active, Neutral, and Earth pins on M1110A input connector.

### **Input Frequency**

49 to 51 Hz sinusoidal

### **Quiescent Current**

Between any two IEC connector pins, less than 30mA @ 240VAC nominal, or less than 70mA @ 480VAC nominal

### **One Cycle Test Current**

Active to Neutral, 13.33 Amps +/-7% @ 240VAC

### **One Cycle Test Duty**

Test can be repeated every 20 seconds @ 240VAC.

### **Active to Neutral Pass Voltage**

195VAC to 277VAC

### **Neutral to Earth Voltage Maximum**

5VAC +/-5% maximum

### **Active To Neutral Impedance Maximum**

1 ohm +/-5% maximum.

### **Threshold Impedance Of Earth Connection To tester.**

10,000 ohms +/-5%. Maximum

### **Impulse Withstand**

5000 volt, 0.5 joule impulse with 1.2/50uS envelope across any combination of the IEC320 input connector pins.

### **Isolation**

3500VAC RMS from the three IEC input connector pins to all other external surfaces on the case.

## **Mechanical**

### **Case Material**

Black high impact glass filled polycarbonate case. The case provides the safety isolation.

### **Case Dimensions**

220mm Long, 100mm Wide, 50mm High, excluding input cables.

### **Operating Temperature**

0 to +55 degrees Celsius

### **Storage Temperature**

-10 to +70 degrees Celsius.

### **Humidity**

0 to + 95% non-condensing.