WA2000

Omni Load Tester

Instruction Manual



Description

The TPI WA2000 Omni Load Tester is an adapter for performing Electrical Load Ratio Tests. It connects to the WA2025 or similar DMM to enable load faults to be found in electrical circuits.

OPERATION

WARNING: BE CAREFUL WHEN YOU ARE NEAR ENERGIZED CIRCUITS. AN ELECTRICAL SHOCK CAN CAUSE AN INJURY.

NOTE: Traditional high-impedance multimeters limit current flow to approx. 3 to 11.5µA, which makes resistances under 3MΩs nearly impossible to detect using voltage tests. Faults are typically triggered with resistances in between 100 to 300 ohms, with most only occurring with vibration. The WA2000 Omni Load Tester enables users to quickly and easily test voltage and detect resistances as low as a couple of ohms in order to prevent intermittent operation when subjected to pressure, temperature, &/or vibration.

A. Electrical Load Ratio Test



(1) Remove power from the circuit to be inspected.

(2) Disconnect the electrical connector from the device

(3) Set the multimeter, with REL% function (e.g. TPI WA2025,) to measure AC or DC voltage as needed.

(4) Connect the Omni-Load Tester to the meter using the positive and negative voltage connections.

(a) Set the voltage on the Omni-Load Tester to that of the system under test (12VDC, 28 VDC or 115 AC) using the VOLT MEASUREMENT switch.

(5) Install test leads on the input connectors of the Omni Load Tester.

(6) Connect the (+) lead from the Omni Load Tester to the (+) voltage connection of the system under test.

(7) Connect the (-) lead from the Omni Load Tester to the (-) voltage connection (ground connection) of the system under test.

(8) Apply power to the circuit to be inspected.

(9) Source voltage should appear on the meter.

(a) If no voltage is present at the component:

1) A complete open or short exists in the circuit

2) Use traditional voltage and continuity testing to identify where the open or short is located.

(b) If the unloaded voltage measured is the correct source voltage (e.g. 12V, 30, 115V):1) After 10 seconds to stabilize, perform the steps below to capture this source voltage as a reference value.

NOTE: The measured value at the time that relative percent mode is enabled is stored as the reference value. The reference value and real-time measurement will be shown on the display concurrently. A relative percentage measurement which indicates the difference between the real-time and reference value will also be shown on the display.

(c) After 10 seconds, press the REL% button on the multimeter.. The upper left of the WA2025 display should show a stable REF (reference) voltage. The upper right and large display should show the active measurement and the main display shows the difference between the active reading and reference.

2) Press the REL% button again. The upper right now shows the percentage of deviation from the reference in percent. Using the Loaded/Unloaded switch on the Omni Load Tester, select Loaded.

3) Compare the Loaded vs the Unloaded voltage drop.

a) After 10 seconds, make sure that the relative percentage measurement is <0.5% for 12V & 30V sources, and <0.2% for 115V sources

b) If the relative percentage measurement is > than recommendations in step a), it is possible that there are broken wire strands or bad circuit connections.

<1> Continue to isolate by re-testing closer to the source of power.

NOTE: If at the source of power, compare with a with a similar circuit (compare left to right, forward to aft or a on similar device) prior to source replacement.

<a> Repeat steps above to ensure the loaded relative percentage measurement is <0.5% for 12V & 30V sources, and <0.2% for 115V sources.

<b> If the loaded measurement is now ok, the defect is in between the good measurement and the poor measurement.

<c> Isolate the poor section with resistance and shaking wiring as necessary

SPECIFICATIONS

Operating Test Voltages	12VDC, 30VDC, 115VAC
Load Current	10mA
Over Voltage Rating	1000V (PTC Protected)
Operating Temperature	32 °F to 122 °F (0 °C to 50 °C)
Storage Temperature	-4 °F to 140 °F (-20 °C to 60 °C)
Humidity	0 to 80 %RH

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