ULTRA-TECH ENTERPRISES Inc.

QUICK-START MANUAL 16397-91 Rev. B
for
AC VANE RELAY TESTER 16397-00.

PROCEDURE

NOTE: This tester is not for use with POWER-OFF Relays that exceed 20Vrms for the TRACK coil.

1. Turn **COIL CONFIG.** selector knob to **SERIES** or **PARALLEL** position as needed for relay to be tested.
2. Turn the **CONTACT SELECT** knob to **OFF** position.
3. Turn the **TRACK VOLTAGE SET** knob to fully counterclockwise (min. voltage/max resistance).
4. Turn the **TRACK VOLTAGE ADJUST** knob to fully clockwise (max voltage).
5. Turn the **LOCAL VOLTAGE ADJUST** knob to fully counter clockwise (min. voltage).
6. Plug the supplied AC cord into the **AC POWER** connector on the Front Panel and press **OFF (0),** then the other end of the cord into an AC outlet that supplies an AC voltage at or above the required AC voltage and at the frequency for the relay to be tested.
7. Install **RELAY TO BE TESTED into plugboard** and make sure it is **fully seated** and **locking latch engaged**.
8. Level tester utilizing the bulls-eye level mounted above the relay plugboard and the leveling arm(s). Slide the arm(s) into any of the two leveling brackets on the bottom of the case as needed, front and/or back, then adjust the knurled screws to level the tester. **Always have one arm installed on the front side of the tester to prevent it from tipping forward.**
9. Turn the **RELAY SELECT** knob to first, second or third position, depending on relay to be tested.
   FIRST position for **6 Front** and **4 Back** contacts with **Local Coil** on **7F** and **8F** terminals.
   SECOND position for **2 Front** and **2 Back** contacts with **Local Coil** on **7F** and **8F** terminals.
   THIRD position for **2 Front** and **2 Back** contacts with **Local Coil** on **10E** and **10F** terminals.
   DO NOT USE positions Four (7F-3B Red) or Five (7F-3B Blue), they are to be used with another plugboard insert.
10. Press the **AC POWER** switch to **ON (1**) and allow panel meters to warm-up for 5 minutes for stability before running test.
11. The contact LED status indicators will be lit for only the contacts that are under test, all other LED's will be OFF. **RED** indicates contact is **OPEN**. **GREEN** indicates contact is **CLOSED**.
    Verify the conditions of the contacts with the relay tested de-energized**, FRONT = RED, BACK = GREEN**.
12. Turn the **LOCAL VOLTAGE ADJUST** up slowly to obtain the Local voltage required for the relay under test. Monitor the **LOCAL VOLT** and **AMP** meters. This is normally either 110 VAC or 115 VAC (+/- 1V).
13. Turn the **TRACK VOLTAGE SET** knob clockwise to increase the voltage until the vane solidly touches the top roller/front stop. (Relay will energize).
    Verify conditions of the contacts**, FRONT = GREEN, BACK = RED**.

Continues on other side.

14. **NOTE:** If **TRACK CURRENT** exceeds 0.7 amp for a few minutes, shorter time if current is higher. The **OVER CURRENT** will activate, indicated by the **OVER CURRENT LED** coming **ON** (gradually). This is to protect the internal control resistors from overload.
    When this happen, turn **TRACK VOLTAGE SET** knob fully counterclockwise and the **TRACK VOLTAGE ADJUST** to approx. ¼ up position and wait for a minute, it will automatically reset. Indicated by **OVER CURRENT LED** turning **OFF**.
    (NOTE: If the TRACK VOLTAGE ADJUST is turned fully counterclockwise, the OVER CURRENT LED is going OFF right away, but OVER CURRENT it is not necessarily reset yet, the OVER CURRENT LED have no power with this setting. Leaving the TRACK VOLTAGE ADJUST knob turned up approx. ¼ turn will power the OVER CURRENT LED, to see when it resets).
15. Turn the **TRACK VOLTAGE ADJUST** knob fully counterclockwise. (Relay will de-energize) Then, slowly turn clockwise to increase the voltage until ALL the **FRONT** contacts **just close = GREEN**.
    This is the **PICK-UP / WORKING Value**. Record both the LOCAL and TRACK Voltage and Current from the meters and verify that the contact LED indicators change their color to all FRONT = GREEN.
16. Again slowly turn the **TRACK VOLTAGE ADJUST** knob clockwise to increase the voltage until the vane just touches the top roller / front stop. This is the **FULL STROKE Value**.
    Record both the LOCAL and TRACK Voltage and Current from the meters.
17. Slowly turn the **TRACK VOLTAGE ADJUST** knob counterclockwise to decrease the voltage until **ALL** the **FRONT** contacts **just open = RED**. This is the **DROP-AWAY** Value.
    Record both the LOCAL and TRACK Voltage and Current from the meters and verify the contact LED indicators change their color to all FRONT = RED.
18. Divide the DROP-AWAY Value (Current) by the PICK-UP / WORKING Value (Current) to get the percentage of DROP-AWAY (Min. Drop-Away % of Actual PU). Record this value.
19. At any time during the test, the contact resistance can be measured by turning the **CONTACT SELECT** knob to the desired contact to be measured. If an open contact is selected the CONTACT LED is turning on RED and the CONTACT RESISTANCE MILLIOHM meter displays “1” on the left in the display.
    If the contact is closed , the **CONTACT RESISTANCE** meter display contact resistance in milliohm.
    NOTE: When contact resistance is measured, the four or eight contact status LED’s are off.
20. The 0.050 ohm **TRACK SHUNT** switch **ON** shall drop-out the relay if is energized.
21. Turn the **TRACK VOLTAGE SET** knob fully counterclockwise (min voltage / max resistance).
22. Turn the **TRACK VOLTAGE ADJUST** knob fully clockwise (max voltage).
23. Turn the **LOCAL VOLTAGE ADJUST** knob fully counterclockwise.
24. Remove tested relay from plugboard socket.
25. To test another relay, return to Step #7.
26. If all testing is completed, press the **AC POWER** switch **OFF (0)**.