

# ULTRA-TECH ENTERPRISES Inc.

## QUICK-START MANUAL 16121-91 Rev. D for AC VANE RELAY TESTER 16121-00

### PROCEDURE

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

1. Screw the two relay hold down rods, flanged end first, into relay plugboard.
2. Turn **COIL CONFIG.** selector knob to **SERIES** or **PARALLEL** position as needed for relay to be tested.
3. Turn the **CONTACT SELECT** knob to **OFF** position.
4. Turn the **TRACK VOLTAGE SET** knob to fully counterclockwise (min. voltage/max resistance).
5. Turn the **TRACK VOLTAGE ADJUST** knob to fully clockwise (max voltage).
6. Turn the **LOCAL VOLTAGE ADJUST** knob to fully counter clockwise (min. voltage).
7. Plug supplied AC cord into the **AC POWER** connector on the Front Panel and press **OFF (0)** on the power switch, then plug the other end of this 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.
8. Install **RELAY TO BE TESTED into plugboard** and lock in place with the two knurled nuts.
9. 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 (front or back) as needed, then adjust the knurled screws to level the plugboard.

**Always have one arm installed on the front side of the tester to prevent it from tipping forward.**

10. Turn the **RELAY SELECT** knob to **TWO** or **FOUR** contact sets as needed for relay to be tested.
11. Press the **AC POWER** switch to **ON (1)** and allow panel meters to warm-up for 5 minutes for stability before running test.
12. 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 condition of the contacts for the relay under test, **FRONT = RED, BACK = GREEN**.
13. 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).
14. 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.**

15. **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 overloading. When this happens, 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. Wait a minute after **LED** is off, then continue).
16. 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**.
17. 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.
18. 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**.
19. 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.
20. 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.
21. The 0.050 ohm **TRACK SHUNT** switch **ON** shall drop-out the relay if is energized.
22. Turn the **TRACK VOLTAGE SET** knob fully counterclockwise (min voltage / max resistance).
23. Turn the **TRACK VOLTAGE ADJUST** knob fully clockwise (max voltage).
19. Turn the **LOCAL VOLTAGE ADJUST** knob fully counterclockwise.
20. Remove tested relay from plugboard socket.
21. To test another relay, return to Step #8.
22. If all testing is completed, press the **AC POWER** switch **OFF (0)**.