

# R20 Field Relay Test Tool

## Technical Bulletin

The ILC R20 Field Relay Test Tool is used to confirm operation of field mounted R20, R20D relays. This tool allows direct connection to the R20D relay using the installed CAT-5 data cable for testing during the Installation process. The installer can test for On/Off operation and force the 0-10V Dimmer output to a minimum level, confirming both relay and data cable operation.

### **Caution:**

The R20 relay is controlling 120V/277/347AC power to lighting fixtures, always use caution when handling the line voltage wire, this should only be done by authorized personnel. The 0-10VDC dimming control wires can also have a current leakage potential at voltages as high as 50% of the line voltage controlled with non-isolated LED drivers.

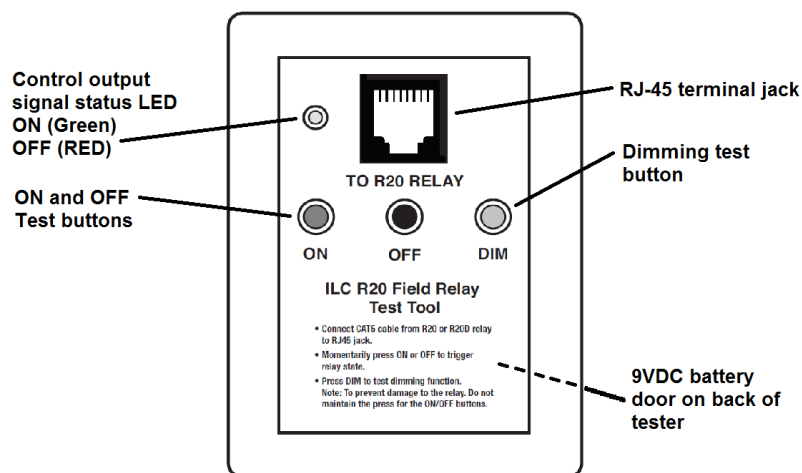
The test tool is designed for direct R20 relay testing only and should not be used with EVO controller outputs or other LightSync devices.

### **Test Tool power:**

- The test tool is provided with a standard 9V alkaline battery, ensure the battery is properly connected.
- Press the ON / Off buttons momentarily, the LED should flash Green / Red
- If not replace the 9V battery or check the battery voltage with a test meter.

### **Connecting the R20D relay:**

- Prior to using the R20 test tool, verify that the CAT-5 data a cable has been tested, check for CAT-5 pinout termination using a standard CAT-5 data cable tester, Refer to Field RJ45 Connection Termination Detail - ID0006.
- Plug the field installed CAT-5 data cable connected to the R20 relay into the RJ-45 terminal jack of the R20 Field Relay Test Tool.
- Press the ON or OFF button momentarily to change the state of the relay.
- Press and hold the DIM button to verify dimming operation.



## **Troubleshooting:**

### **R20 relay does not change state**

- Verify CAT-5 data cable connection, possibly use a “Known-Good” test cable to bypass the installed data cable.  
(The Green and Orange wire pairs are used for relay control)
- The relay should “snap” on/off and can be heard or felt at the relay.
- Verify the 120V or 277V power to the lights is on.
- Verify the lighting fixtures are properly connected.
- If the R20 relay is not operating contact ILC for replacement and warranty options.

### **Fixtures do not Dim**

- Verify CAT-5 data cable connection, possibly use a “Known-Good” test cable to bypass the installed data cable.  
(The Brown wire pair is used for dimming control)
- The 0-10V dimming control circuit in the R20D relay will revert to full non-dim level when no control signal is sent to the relay, the DIM test button signals the dimming circuit to go to a minimum level.
- The 0-10V dimming wires from the lights can be shorted together to cause a minimum dim level action for the lights, if no dimming occurs have the installer verify the wiring.
- If the polarity of the 0-10VDC wires are reverse at the R20D relay connection - the lights will not be controlled and will always stay at a full non-dim level.
- If the Lights are staying at a constant dim level and do not change, have the installer check the wiring for polarity between fixtures, one or more fixtures may have the positive (+ Purple) and negative (- Gray) wires crossed, shorting the fixture dimming circuit into a constant dim state.

### **Note:**

The maximum distance to a R20D relay from the EVO panel is 100 feet on a CAT-5 cable.

Only One R20 relay is supported per EVO output.

Standard Class-2 wiring methods should be observed for the CAT-5 control cable and the 0-10V dimming wiring to the lighting fixtures. Pre-made armored power & data cable products are allowed for short distances in an office or classroom between fixtures. Runs at longer distances should separate 0-10V class-2 dimming wire from the line voltage or place the R20D relay closer to the loads.

To Order a R20 Field Relay Test Tool from ILC

contact customer service at 952-842-1900

or [customerservice@ilc-usa.com](mailto:customerservice@ilc-usa.com)

Request part # **93003081**