

Project Summary:

Consultation on Product Qualification Testing

DfR Solutions was asked to determine the appropriate testing procedures for qualifying an outdoor product. This control unit has an outer housing with an inner door that separates the user interface from the electronics and three holes in the bottom of the housing for wiring. Due to environmental conditions, the manufacturer wanted to ensure reliability given worst case field conditions. DfR Solutions recommended cyclic temperature-humidity testing, constant temperature-humidity testing, and water spray testing. DfR Solutions also recommended making design changes to reduce exposure to standing water and pest infestation, including designing a trigger switch on the door and using perforated diaphragms on the wiring holes.

Keywords: water spray test, cyclic humidity test, trigger switch, outdoor exposure, conformal coating, moisture ingress, dew condensing, rain, blowing rain, watertightness, drip, barriers, standing water, electrical shorting, ramp rate, dwell times, temperature rise, open doors, no conduit