

## NOTE TO USERS

# Improving Relay Life for NI Switches

## Switch Software

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### Monitor Relay Usage

- Analyze the relay counts on your NI switch products to better manage the use of each relay.
  - Use the *niSwitch GetRelayCount* VI or the *niSwitch\_GetRelayCount* function to track relay usage for most Switch modules. Refer to the *Relay Count* topic of the *NI Switches Help* for more information about supported modules.
  - Edit test sequences to reduce the number of switching cycles.
  - Change external connections on overused rows and columns in a matrix.

## Switch Hardware

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### Prevent High Currents from Damaging Relays

High inrush current can damage relays when switching with capacitive loads. This is because the inrush current needed to charge the capacitive load may be substantially higher than the steady-state current through the system.

- Use series resistance when switching with capacitive loads to prevent high inrush currents from damaging relays.
  - Examples of capacitive loads include: DMMs, long cabling, and DUTs.
- Turn off power supplies or other voltage sources connected to the relay before switching to ensure that voltage levels are the same on both sides of the relay.

### Limit Flyback Voltages

Flyback voltages are large counter electromotive forces that occur when relays open. This counter electromotive force can generate large voltage spikes across your relay contact because of the reactive energy stored in the load as the magnetic field in the inductor breaks down.

- Install a flyback diode for DC loads or a metal oxide varistor for AC loads when switching with inductive loads to prevent flyback voltages from damaging relays.
  - Examples of inductive loads include: motors, solenoids, transformers, and relay coils.



**Note** Ensure that implemented changes do not affect signal integrity or minimum signal requirements for your NI Switch product. Refer to the *General Switching Considerations* topic of the *NI Switches Help* for more information.

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