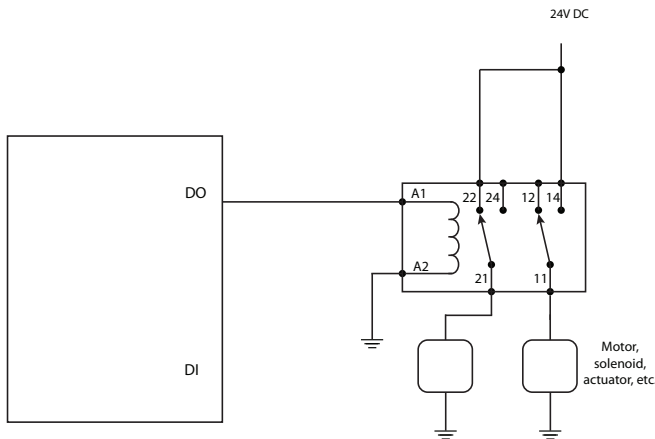


# Lacking Safety in Interposing Relay Applications?

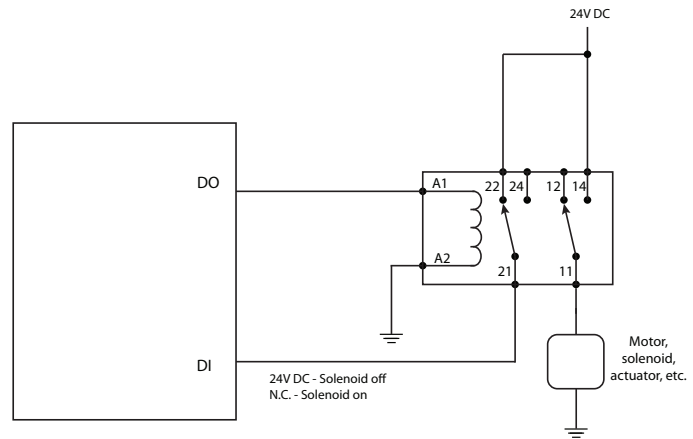
Preventive Measures for Relay Circuits

## Application Issue

The most common failure seen in relays is welded contacts. This prevents you from turning off the load and can introduce unsafe conditions for plant floor operators. Scenarios A and B depict some of the shortcomings of traditional relay circuit implementations.



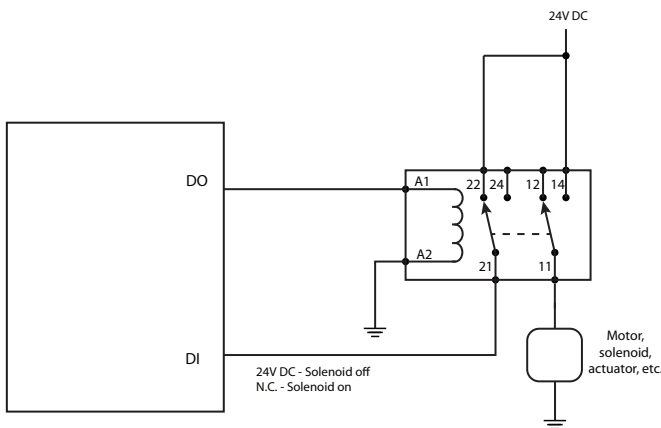
**Scenario A:** There is no signal monitoring of the relay contact state. This leaves you unaware of unsafe conditions. This type of scenario is characterized by relay circuits using each contact as a load control, lacking a contact dedicated to signal monitoring.



**Scenario B:** There is signal monitoring of the relay contact state; however, the monitoring contact operates independently of the load contact. This leaves you susceptible to observing a false safe condition.

## Component Solutions

The 700-HPS Plug-in Safety Relay avoids the unsafe conditions presented in Scenarios A and B by making use of mechanically linked contacts. This is a two-pole configuration with changeover (CO) contacts and is configured with one pole acting as a normally open (N.O.) contact, while the other pole acts as a normally closed (N.C.) contact per its EN50205 "Type B" rating.

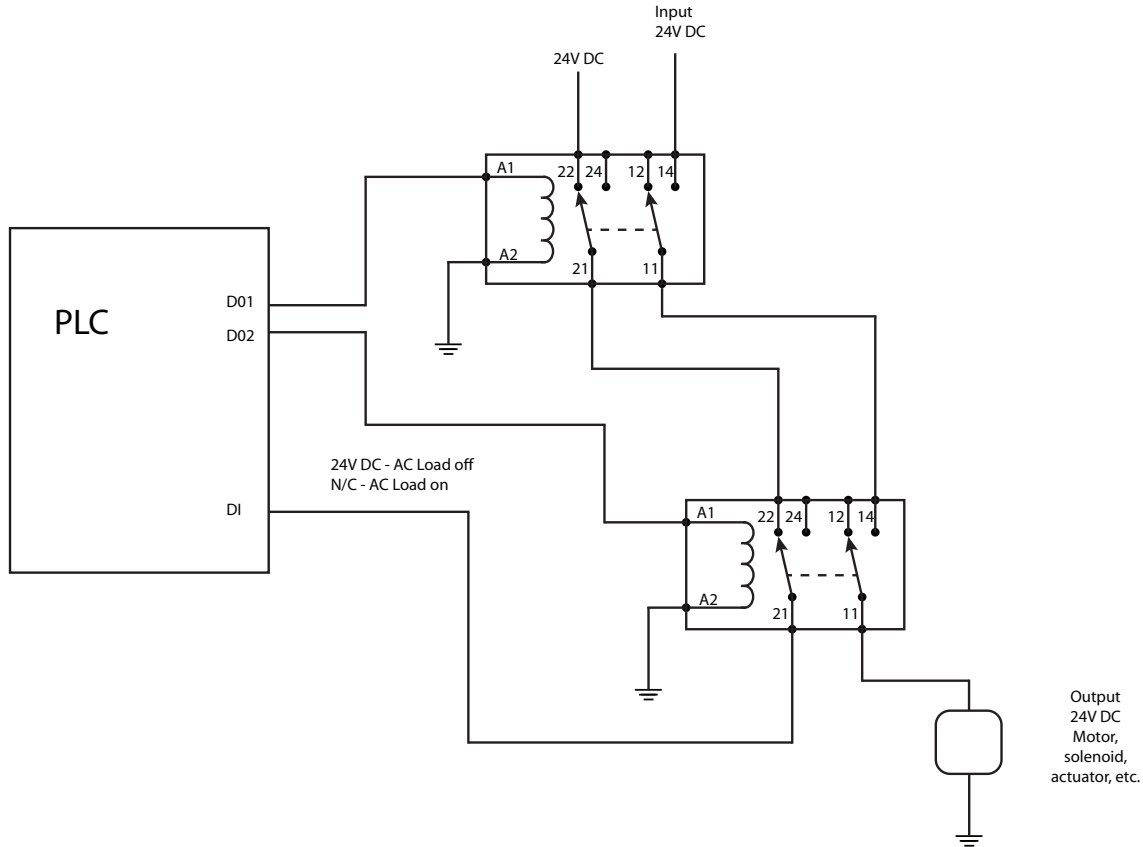


**Scenario C:** Signal monitoring is implemented using mechanically linked contacts. If the load contact becomes welded, the mechanical linkage prevents the monitoring pole from transitioning to the safe state when the digital output to the load is turned off. This allows the problem to be immediately detected. Because the poles are CO, you can determine which pole is the N.O. or N.C.



# Expanding Your Architecture

You can achieve complex safety circuitry with the 700-HPS, allowing you to implement single-fault failure tolerance for the system. One way to achieve this is by configuring the system for redundancy through the use of two relays as shown below. If the contacts in one relay become welded, the other relay can still break the circuit. This implementation also protects against PLC failures, because it requires both digital outputs to be functional to complete the circuit.



## Summary

The 700-HPS Safety Plug-in Relay allows you to bridge PLC-to-load connections while implementing a layer of safety. This is an ideal solution for users who want to take preventive measures against unsafe conditions in the relay circuit. For more information on 700-HPS Plug-in Safety Relays, please visit: <http://ab.rockwellautomation.com/Relays-and-Timers/PCB-Pin-Style-Safety-Control-Relays>



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