

Using an SEL-849 With Interposing Control Relays

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INTRODUCTION

The SEL-849 Motor Management Relay is a powerful, cost-effective relay used to protect and control motor and feeder circuits. The SEL-849 is suited for new applications and retrofit installations due to its compact size, pass-through current transformer (CT) arrangement, and built-in arc-flash sensor technology. Figure 1 shows an example of a motor control scheme with an SEL-849.



Figure 1 Example SEL-849 Motor Control Scheme

PROBLEM

Engineers and system integrators who incorporate the SEL-849 into complex and/or existing control systems may encounter challenges with the input wetting supply voltage. SEL designed the SEL-849 to have an internal +24 Vdc wetting voltage supply for its inputs. Most end users will find this feature adequate for their applications. Other users may have applications that require a different wetting voltage supply. Facilities use separate wetting voltage circuits for many purposes, including supervisory control and data acquisition (SCADA) testing, lowering voltage drop for long control runs, or equipment with different voltage ratings. Figure 2 shows an example control wiring scheme using the internal wetting voltage of the SEL-849.

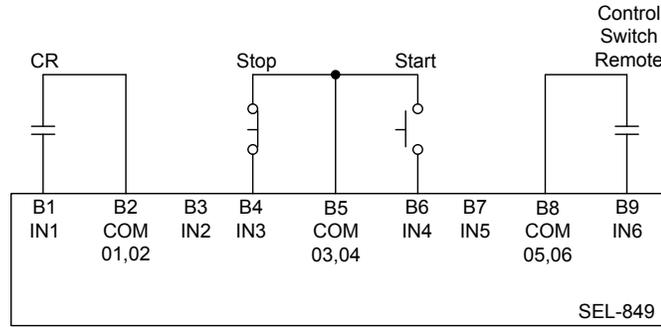


Figure 2 Control Connections Using Internal Wetting Voltage

SEL SOLUTION

SEL recommends using interposing relays to isolate the inputs from the control voltage to adapt the SEL-849 to complex wiring schemes. An example of this setup is shown in Figure 3.



Figure 3 SEL-849 With Interposing Relays

The end user has flexibility in placing the relays to meet the system needs. SEL recommends mounting the interposing relays as close as possible to the SEL-849 to reduce voltage drop and electrical interference induction on the input wires.

Figure 4 shows an example control system with an SEL-849 and interposing relays.

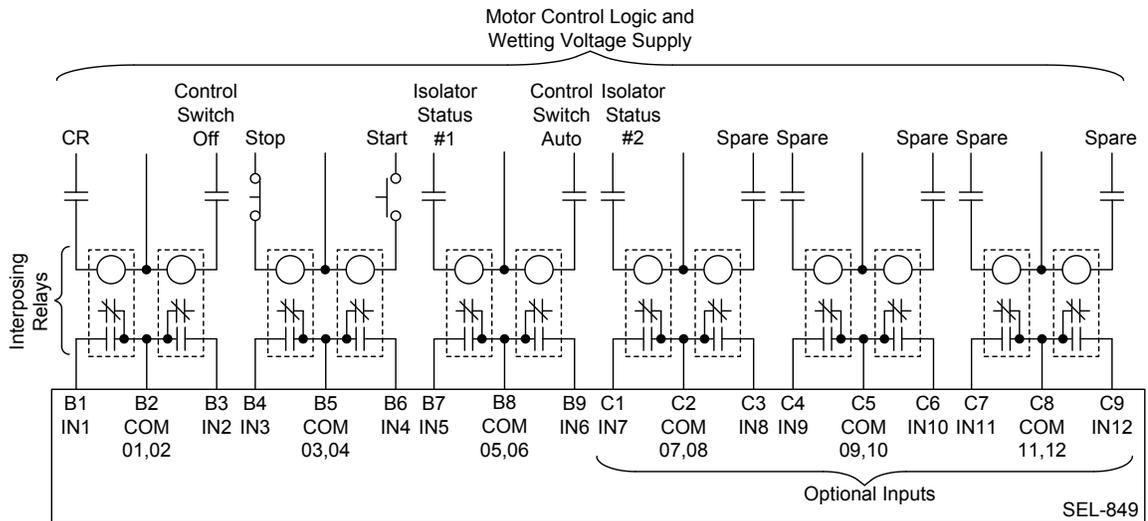


Figure 4 Control Connections Using Interposing Relays

The example system in Figure 4 also shows a possible control scheme for a full-voltage nonreversing (FVNR) motor starter circuit. This control circuit consists of the following:

- Control switch position contacts
- Start and stop pushbuttons
- Isolator switch status contacts
- Contactor status contact
- Spare input contacts

The end user can use powerful SELOGIC® control equation functions to customize the SEL-849 for nearly any control system.

INTERPOSING RELAYS

The example in this application note uses the Altech Corporation RS Series Slimline DIN rail-mounted relay and socket modules as interposing relays. SEL does not specifically recommend the Altech relay for any particular application.

The interposing relay sockets are 6.2 millimeters wide, support plug-in relay modules, and have built-in light-emitting diode (LED) indicators. The relay modules have a single-pole double-throw (SPDT), or Form C, contact configuration. The end user can use optional jumper bars to simplify common voltage wiring between relay contacts. More information can be found on the Altech website.

Table 1 compares electrical and environmental data for the SEL-849 and the Altech relay module.

Table 1 Data Comparison

Characteristic	SEL-849	Altech Relay
Ambient temperature rating	-40° to +85°C	-40° to +70°C
Operate time at nominal voltage	<5 ms	8 ms maximum
Release time at nominal voltage	NA	4 ms maximum
Input current draw	2 mA at 24 Vdc	NA
Coil consumption	NA	170 mW at 5 to 24 Vdc
Number of electrical operations at temperature	10,000 at 85°C	NA

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