

## Relay Output, N.O., 2 Amp - 16 Point IC693MDL940

The *2 Amp Relay Output* module for the Series 90-30 Programmable Logic Controller provides 16 normally-open relay circuits for controlling output loads provided by the user. The output switching capacity of each output is 2 amps. The output points are arranged in four groups of four points each. Each group has a common power output terminal. The relay outputs can control a wide range of user-supplied load devices, such as: motor starters, solenoids, and indicators. Power for the internal relay circuits is provided by the +24 volt DC bus on the backplane. The user must supply the AC or DC power to operate field devices. There are no fuses on this module.

LED indicators which provide the ON/OFF status of each point are located at the top of the module. The LEDs are arranged in two horizontal rows with eight green LEDs in each row; the top row labeled A1 through 8 (points 1 through 8) and the bottom row labeled B1 through 8 (points 9 through 16). An insert goes between the inside and outside surface of the hinged door. The surface towards the inside of the module (when the hinged door is closed) has circuit wiring information, and circuit identification information can be recorded on the outside surface. The outside left edge of the insert is color-coded red to indicate a high-voltage module. This module can be installed in any I/O slot of a 5 or 10-slot baseplate in a Series 90-30 PLC system.

**Table 7-19. Specifications for IC693MDL940**

<b>Rated Voltage</b>	24 volts DC, 120/240 volts AC (nominal – see the following table for exceptions)
<b>Operating Voltage</b>	5 to 30 volts DC 5 to 250 volts AC, 50/60 Hz
<b>Outputs per Module</b>	16 (four groups of four outputs each)
<b>Isolation</b>	1500 volts between field side and logic side 500 volts between groups
<b>Maximum Load</b>	2 amps pilot duty maximum per output 4 amps maximum per common
<b>Minimum Load</b>	10 mA
<b>Maximum Inrush</b>	5 amps
<b>On Response Time</b>	15 ms maximum
<b>Off Response Time</b>	15 ms maximum
<b>Int. Power Consumption</b>	7 mA (all outputs on) from 5 volt bus on backplane 135 mA (all outputs on) from relay 24V bus on backplane

Refer to Appendix B for product standards and general specifications.

### IC693MDL940 Output Module Field Wiring Information

The following figure provides wiring information for connecting user supplied load devices and power source to the 2 amp N.O. Relay output module.

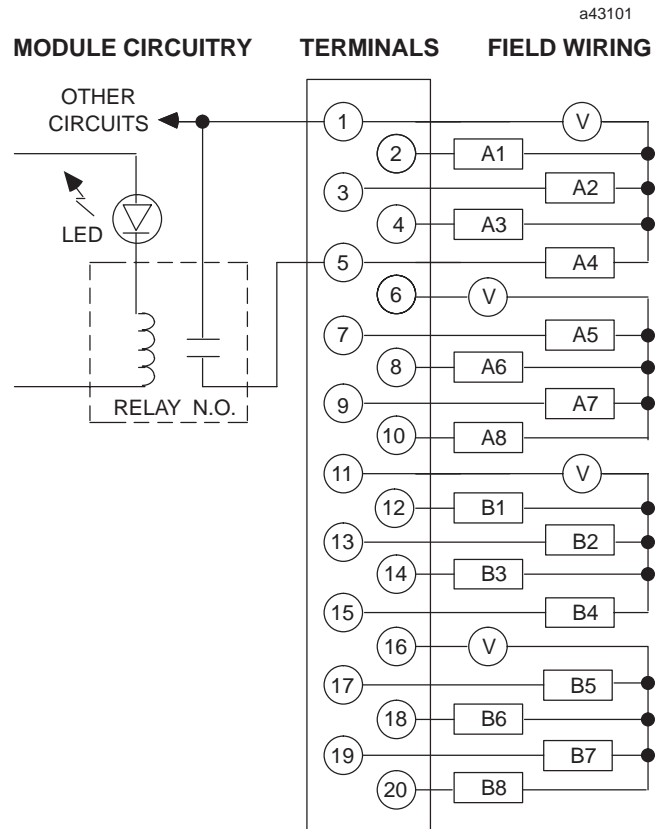


Figure 7-34. IC693MDL940 Output Module Field Wiring

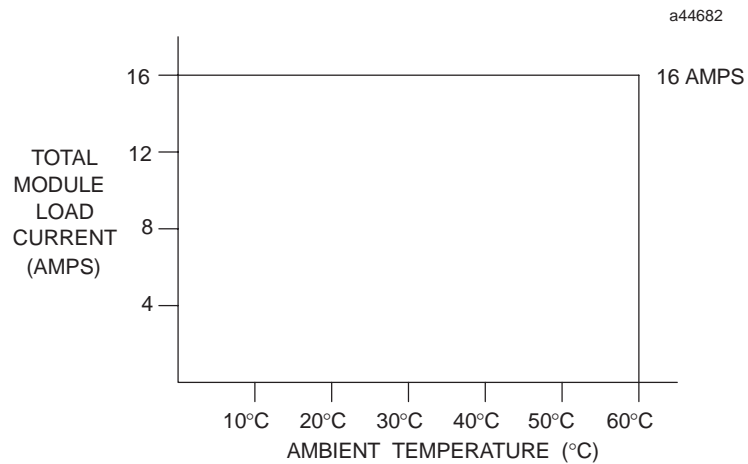


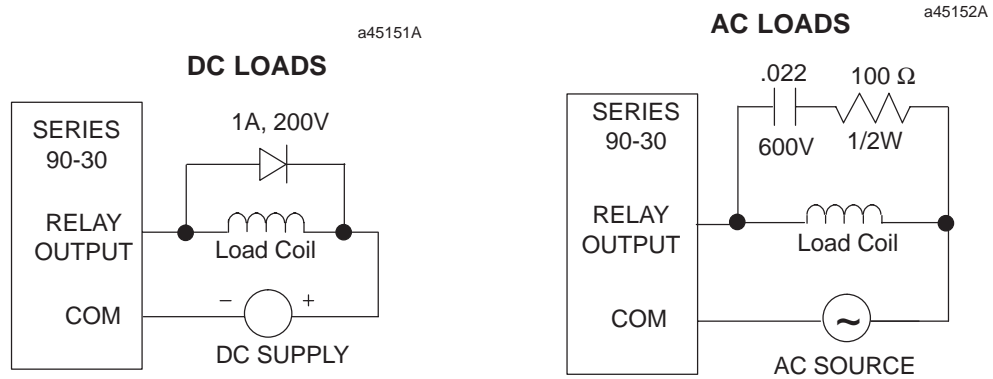
Figure 7-35. Load Current vs. Temperature for IC693MDL940

**Table 7-20. Load Current Limitations for IC693MDL940**

Operating Voltage	Maximum Current for Load Type		Typical Contact Life (Number of Operations)
	Resistive	Lamp or Solenoid †	
24 to 120 VAC	2 amps	1 amp	300,000
24 to 120 VAC	1 amp	.5 amps	500,000
24 to 120 VAC	.1 amps	.05 amps	1,000,000
240 VAC	2 amps	1 amp	150,000
240 VAC	1 amp	.5 amps	200,000
240 VAC	.1 amps	.05 amps	500,000
24 VDC	-	2 amps	100,000
24 VDC	2 amps	1 amp	300,000
24 VDC	1 amp	.5 amps	500,000
24 VDC	.1 amps	.05 amps	1,000,000
125 VDC	.2 amps	.1 amps	300,000

† Assumes a 7 ms time constant

Relay contact life, when switching inductive loads, will approach resistive load contact life if suppression circuits are used. The following figures are examples of typical suppression circuits for AC and DC loads. The 1A, 200V diode shown in the DC load suppression circuit is an industry standard 1N4935. The resistor and capacitor shown for AC load suppression are standard components, available from most electronics distributors.



**Figure 7-36. Load Suppression Examples for IC693MDL940 Output Module**