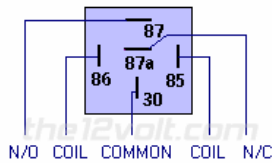


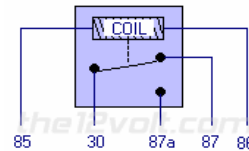
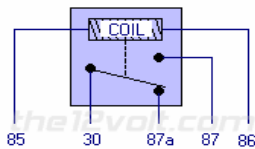
## Mini ISO Bosch Type Relay

In our fire detection/suppression system we use a very reliable relay that is used in many automotive and truck applications. While it is often referred to as the “Bosch” relay, it is manufactured by several companies. Most companies use the generic term “mini ISO” in their catalogs.

One of the best reference sites is: <http://www.the12volt.com/relays/relays.asp> (source of the drawings on this page)



It is a SPDT Relay: (Single Pole Double Throw Relay) which is an electromagnetic switch. Referring to the drawing above, it consists of a coil (terminals 85 & 86), a common terminal (30), normally closed terminal (87a), and one normally open terminal (87). Terminals 85 and 86 are the low amperage triggering circuit. They activate the coil which switches the high current circuits 30-87 and 30-87a.



The above drawings show the relay in the non-energized (left) and energized (right) conditions. A circuit connected to terminals 30 and 87a would be described as normally closed (NC). A circuit connected to terminals 30 and 87 would be described as normally open (NO).

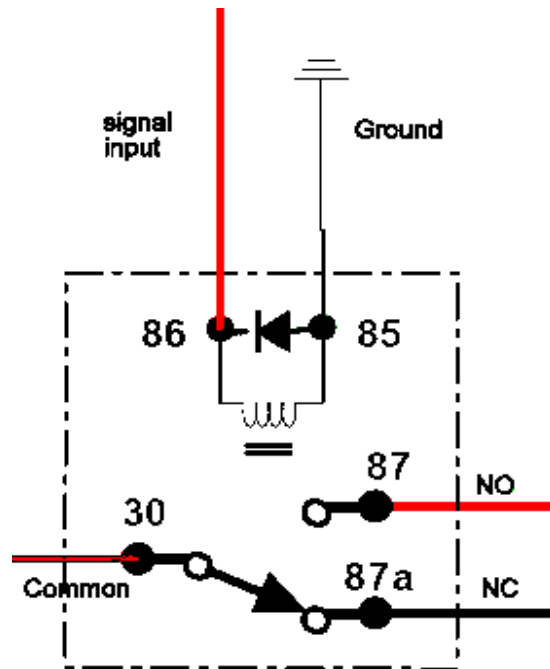


Generally, we install the relay in a pre-wired socket as shown above. The wire colors for the socket are as follows:

85 (coil):	white (ground for relays with diodes)
86 (coil):	red
30 (common):	black
87 (Normally Open):	Green
87a (Normally Closed)	Blue

For most of our applications we use relays that have built-in diodes connected to the coil terminals. The diodes prevent voltage spikes when the relay coil is de-energized. Many applications are not sensitive to those spikes, but I favor the diode application to prevent any issues. The added cost is negligible.

Relays with diodes are polarity sensitive. The coil connections must be wired so that terminal 85 is the ground terminal and terminal 86 is the signal as shown in the diagram below.



Wiring Schematic for Mini ISO relay with built-in diode  
Schematic courtesy of Sean Welsh

Relay/Component sources:

Digi-Key ([www.digikey.com](http://www.digikey.com))

Tyco, digikey part number PB682-ND (12V with diode)

Tyco, digikey part number PB684-ND (24V with diode)

Del City ([www.delcity.net](http://www.delcity.net))

73986 (12V with diode)

73570 wired socket only