relays

- a relay is a switch that is turned on or off using electricity
- relays allow a low-power signal to control a large amount of power
- relays are all around us

automobiles

http://mrg.bz/ryeosy

refrigerators

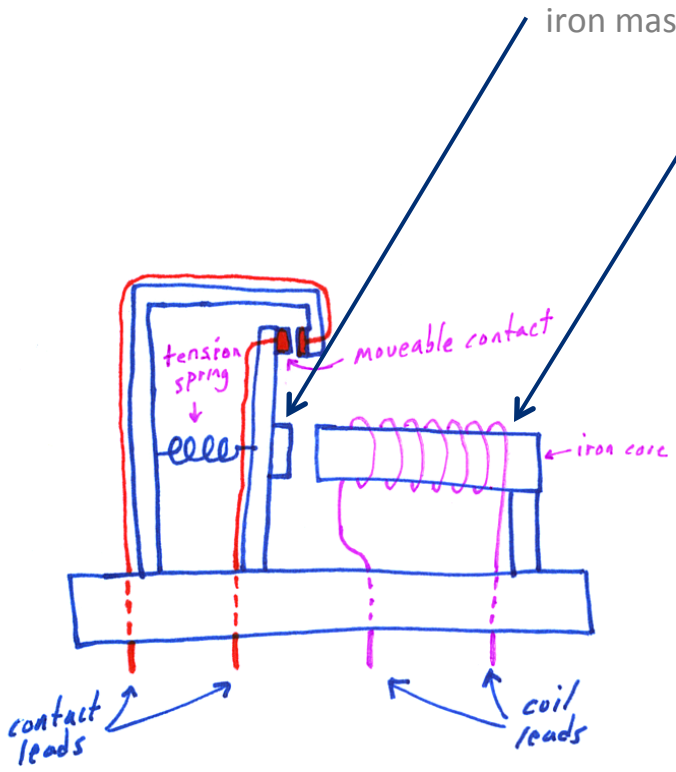
http://mrg.bz/DewCLX

industrial controls

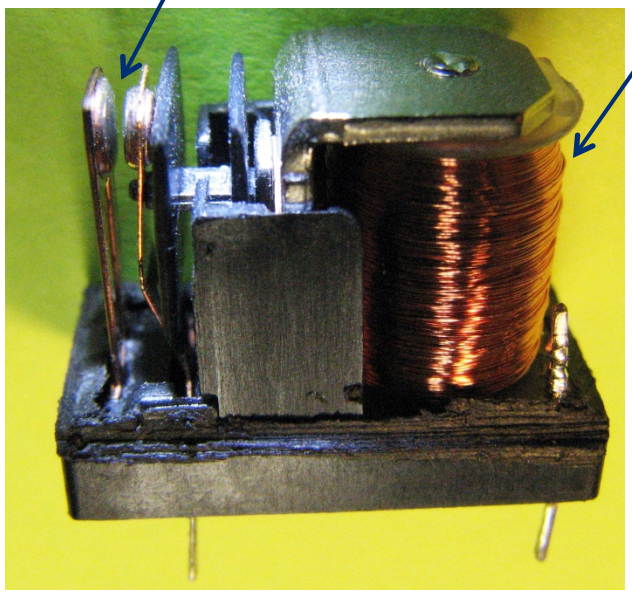
http://mrg.bz/OwnwHK

how relays work

- passing a small current through the coil causes the iron core to become magnetized
- this electromagnet attracts an iron mass on the moveable contacts causing the contracts to cause

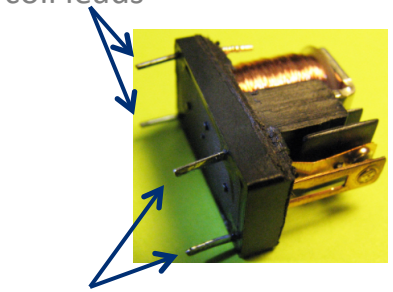


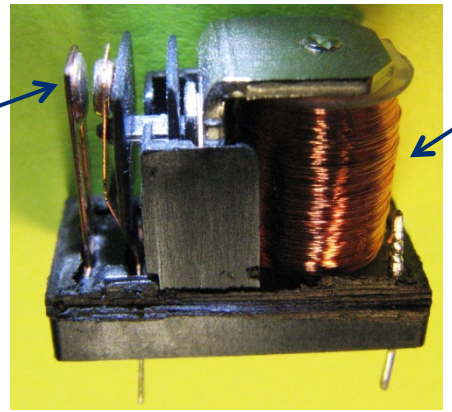
relay used in this class



here, energizing coil pushes the right contact toward the left (stationary) contact.

coil leads



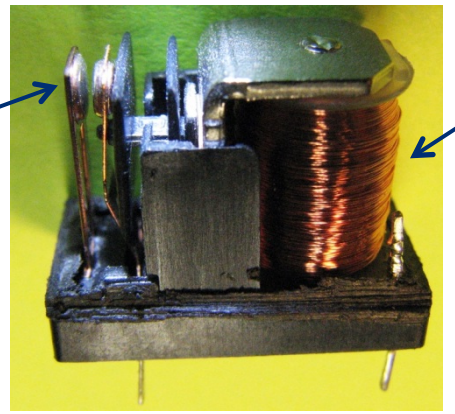


relay vocabulary

coil voltage – the voltage that must be applied across the coil leads to open or close the contacts

coil current – the amount of current drawn by the coil; this much current is required to close the contacts **small current**

contact rating or contact current – the amount of current that can pass through the contact leads without damaging the relay **much larger current**



Is this a NO or NC relay (assuming no current is currently flowing through the coil)?

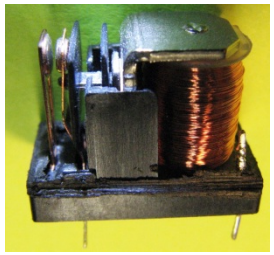
relay vocabulary

default state of contacts – the contacts can be either open (switch = off) or closed (switch = on) by default

a. the contacts of a normally open (**NO**) relay are open when no current is passed through the coil; passing current through the coil causes the contacts to close, allowing power to flow through the contact leads

b. the contacts of a normally closed (**NC**) relay are closed when no current is passed through the coil; passing current through the coil causes the contacts to open, preventing power from flowing through the contact leads

is this relay SP or DP?



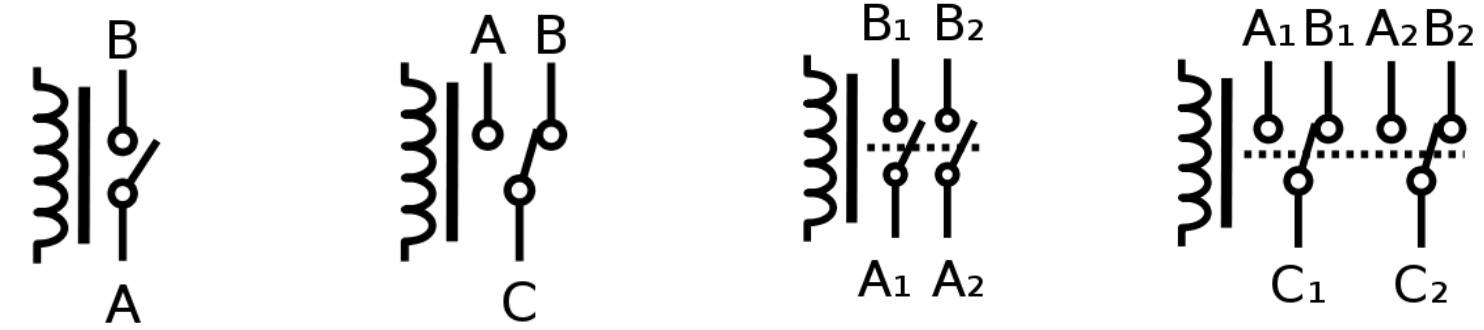
relay vocabulary

number of poles – the number of separate circuits that can be switched by energizing the coil

a. SP = single pole (one circuit is switched)
b. DP = double pole (two circuits are switch)

throw – throw describes what happens to the contacts when the coil is energized

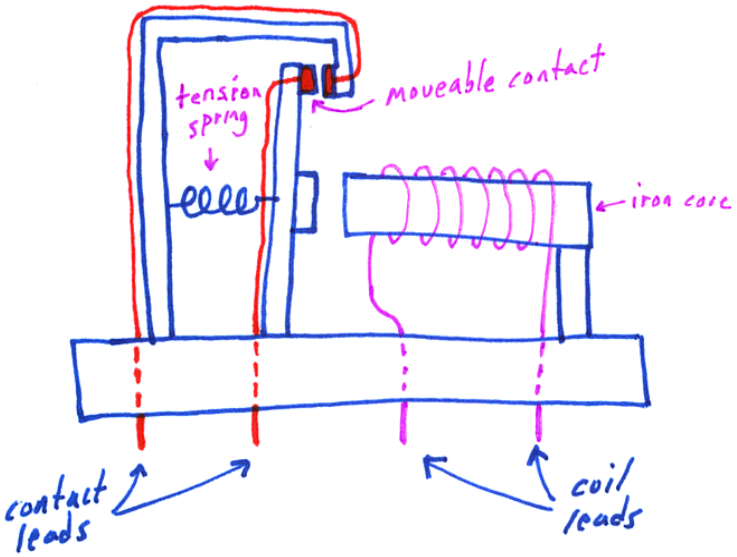
a. Single Throw – energizing the coil of a single throw (**ST**) relay closes the contacts if it is a NO relay; energizing the coil of a ST relay opens the contacts if it is a NC relay
b. Double Throw – energizing the coil of a double throw (**DT**) relay can either open or close the contacts, depending on how it is wired; a DT relay can be wired to either come on or go off when the coil is energized

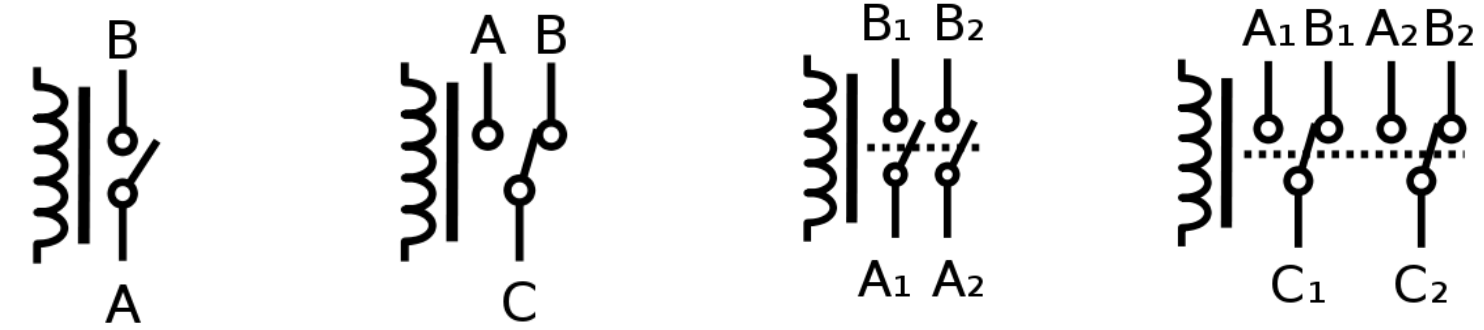


SPST SPDT DPST DPDT

relay diagrams from Wikipedia

what type of relay is this?





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relay diagrams from Wikipedia