ON (閉)VS OFF(開)
開關(Switch)

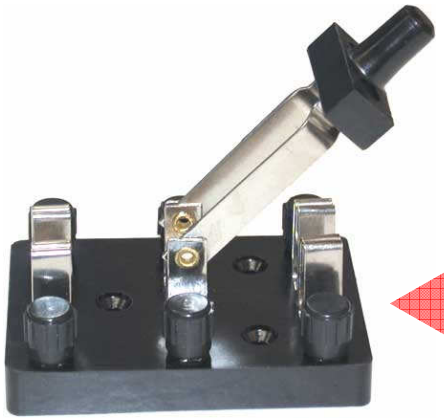
開關(Switch)

- 代號「SW」，又稱「電門」
- 通路(閉)與斷路(開)的控制元件，常與感測器如：超音波、紅外線連接，達成自動化控制
- 依開閉方式：機械式和電磁式兩類
- 半導體材料亦有開關性質，例如：光電二極體有光遮斷效應，電晶體有電場效應等

開關構造

軸(Pole)：一次可通過開關的個別迴路數

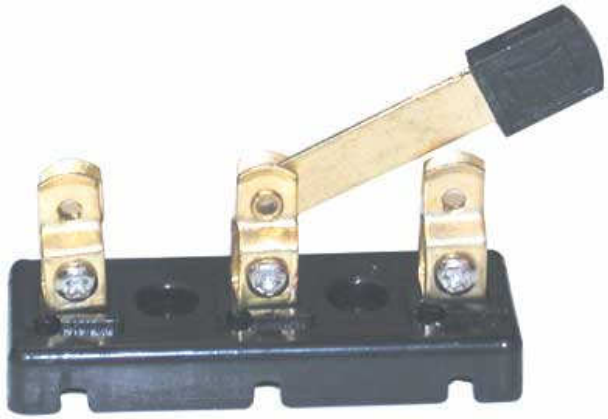
切(Throw)：開關上單一軸可控制之迴路數



單軸單切 SPST

雙軸雙切 DPDT

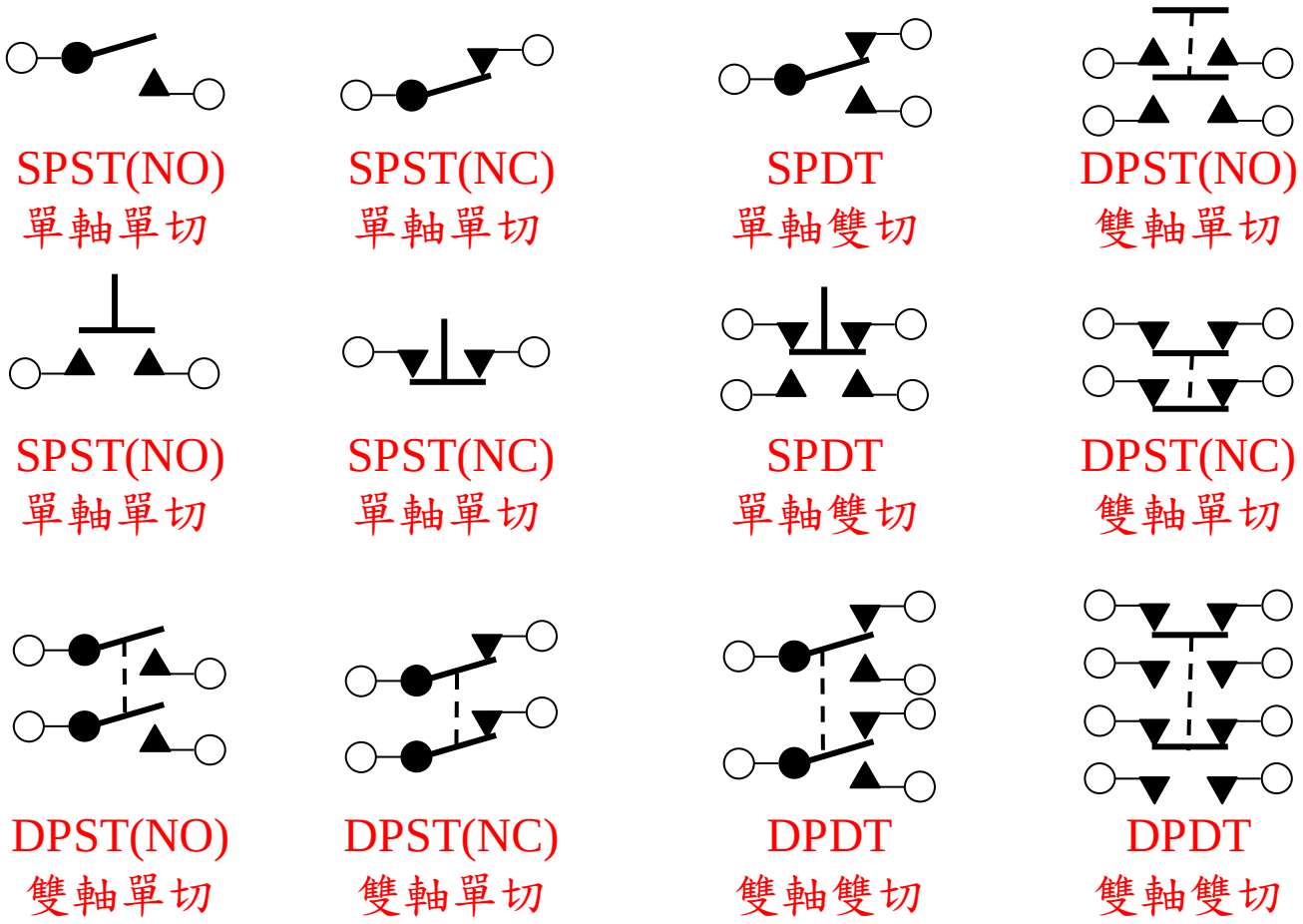
單軸雙切 SPDT



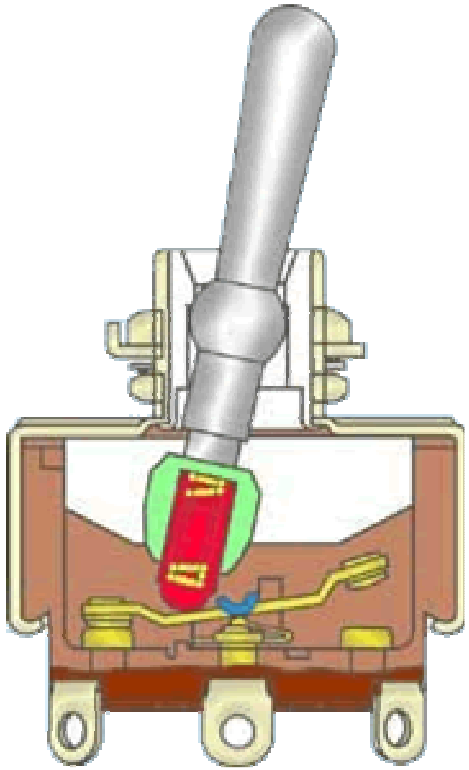
符號構造

軸(Pole)：一次可通過開關的個別迴路數

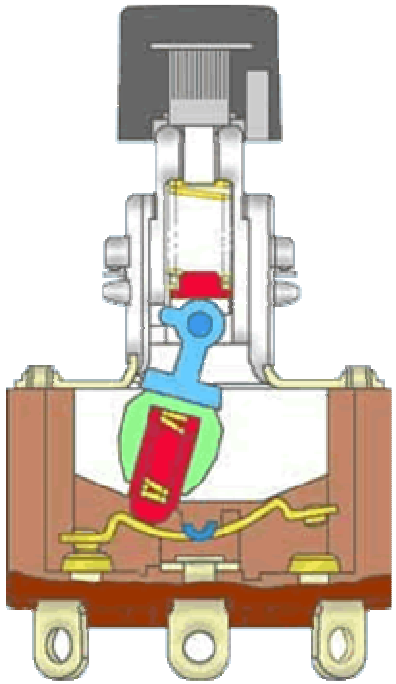
切(Throw)：開關上單一軸可控制之迴路數

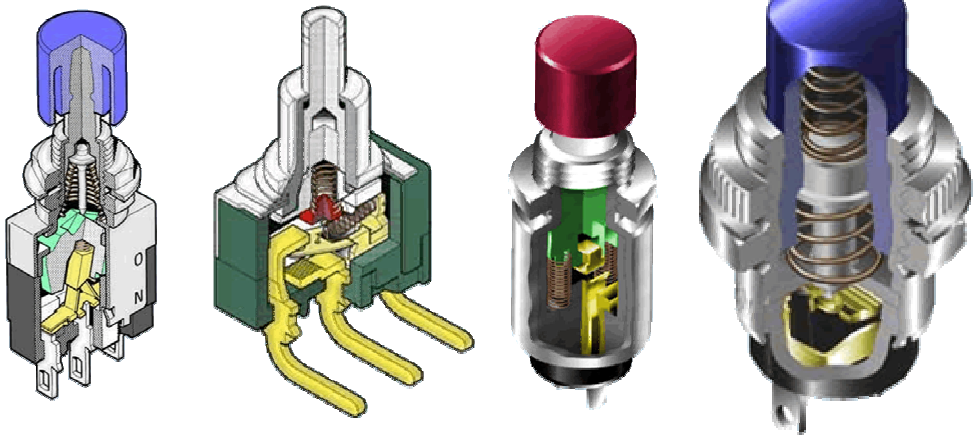


捺跳(搖擺)開關 **Toggle switch**

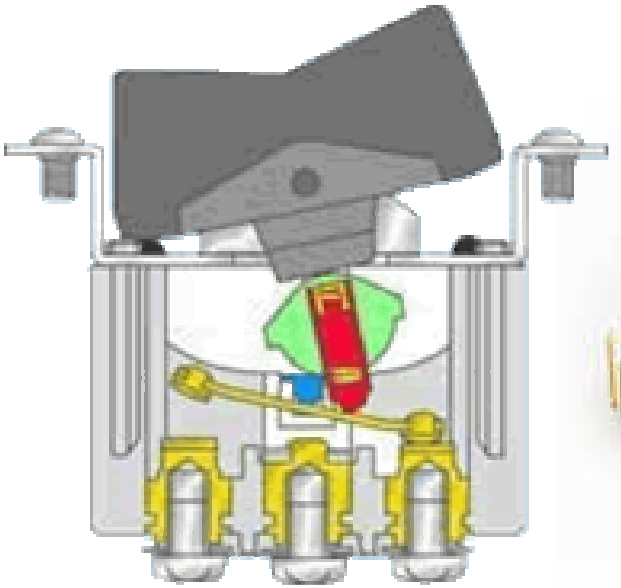


按鈕開關 **Pushbutton switch**

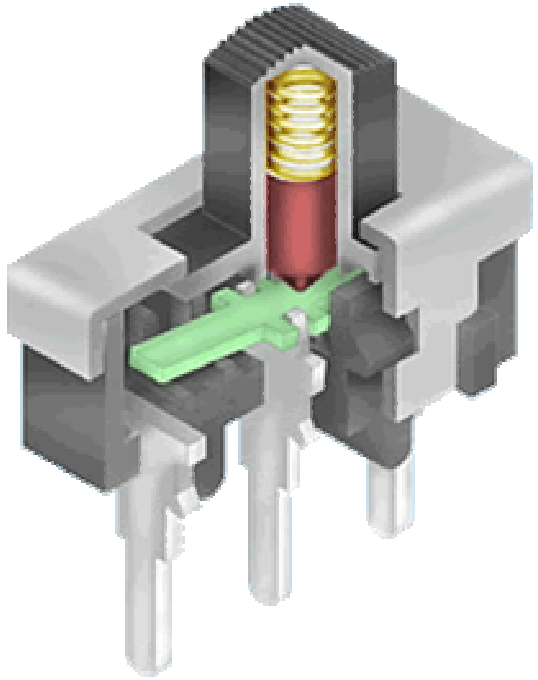




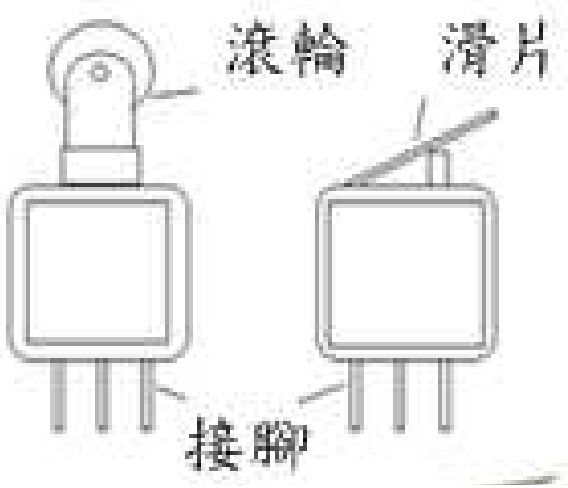
蹺板開關 Rocker switch

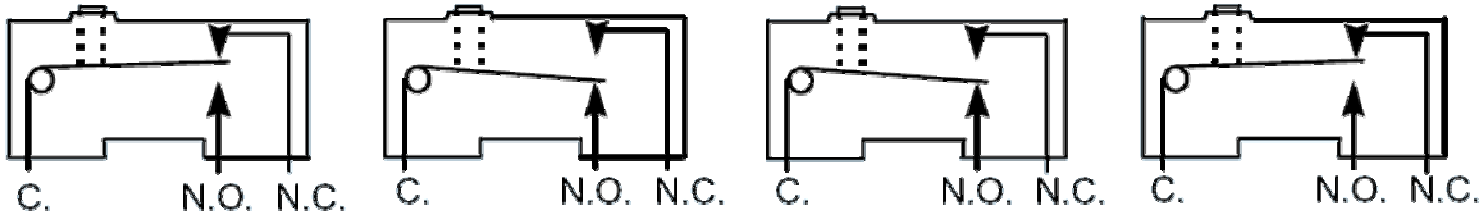


撥動開關 **Slide switch**

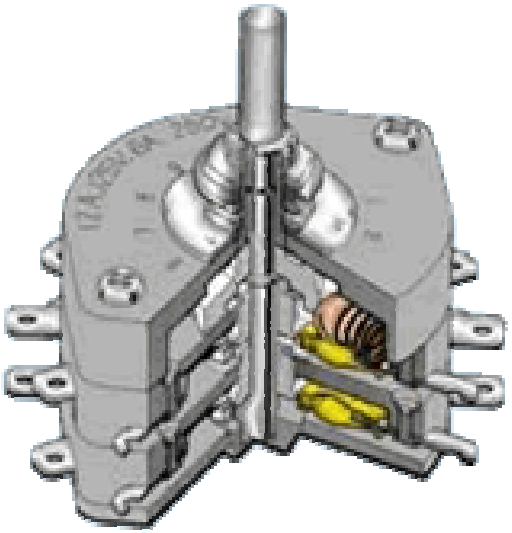


微動開關



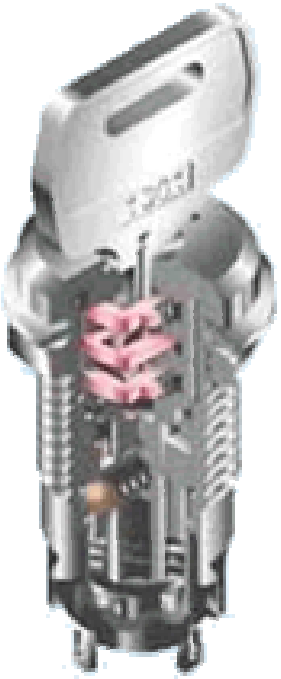


旋轉開關 Rotatory switch

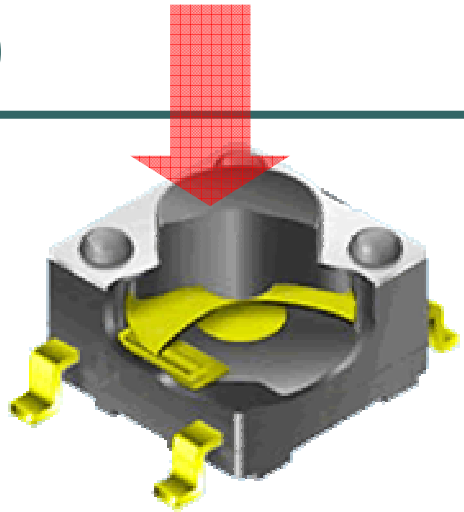


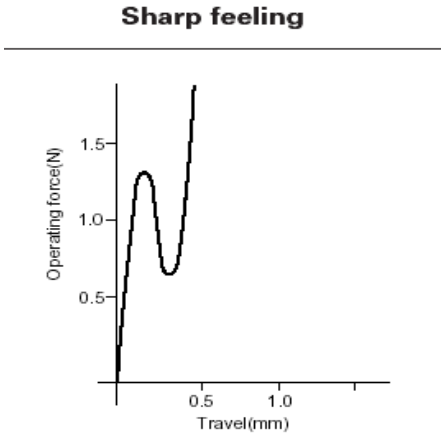
由旋轉軸帶動數個開關接觸點金屬薄片，達成多重開關切換功能

鑰匙開關

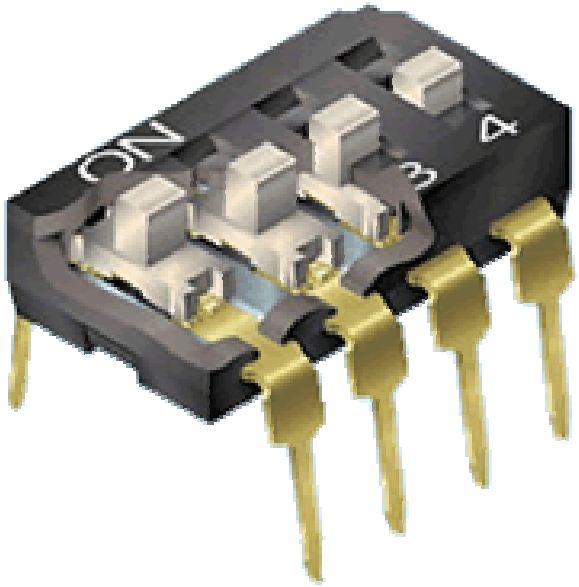


觸摸開關 (TACT Switch)





指撥開關 **(DIP Switch)**



實習活動

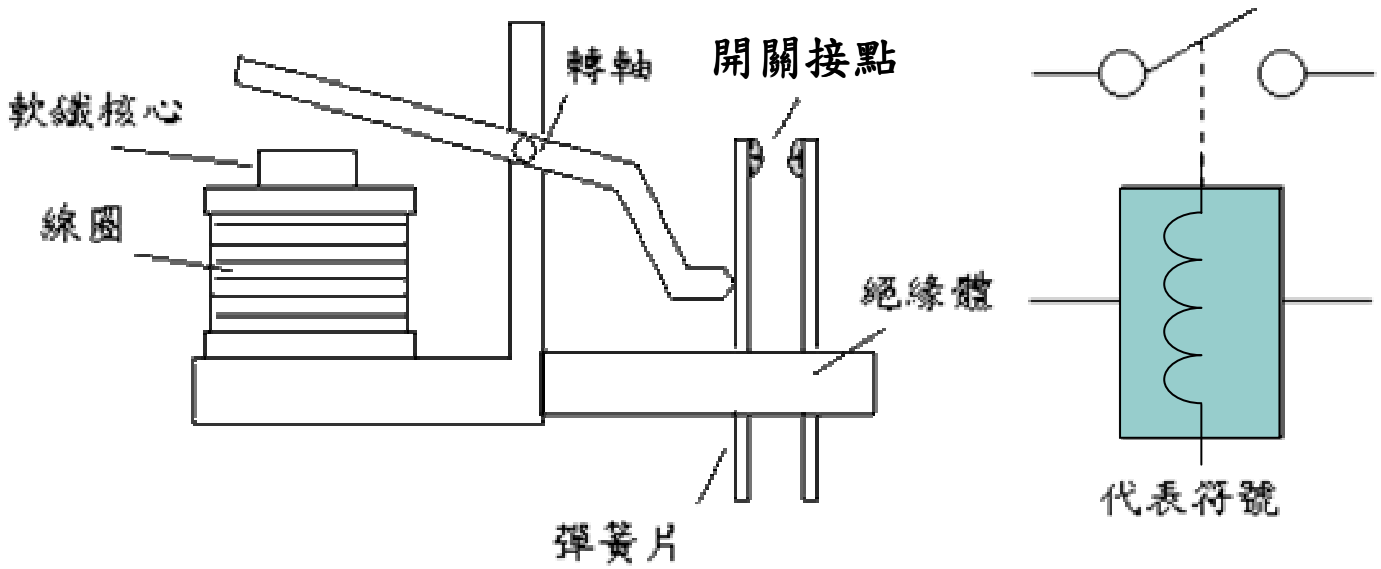
繼電器電路控制

專題

- 2人一組
- 以微動開關切換接在繼電器上的紅綠LED亮滅
- 使上述電路中的LED亮後保持不滅(自保迴路)
- 以兩個繼電器完成個別的自保迴路，並互鎖對方的自保迴路(互鎖迴路)

繼電器構造

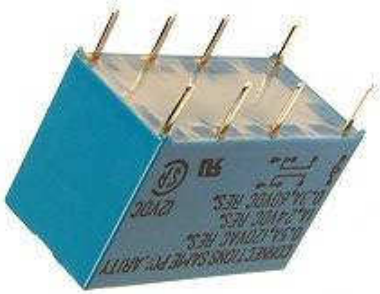
- **以電磁力來控制切換方向的開關。**
- 當線圈通電後會產生磁性，將擺臂吸下迫使開關的接點相接，使兩接點形成通路。



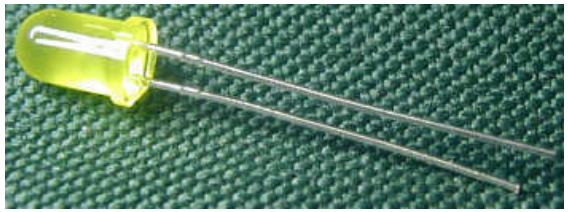
繼電器規格

- 注意線圈的工作電壓是直流或是交流電
- 切換開關耐電壓程度
- 繼電器的規格有6V、9V、12V、24V、48V、100V、110V、200V、220V…等

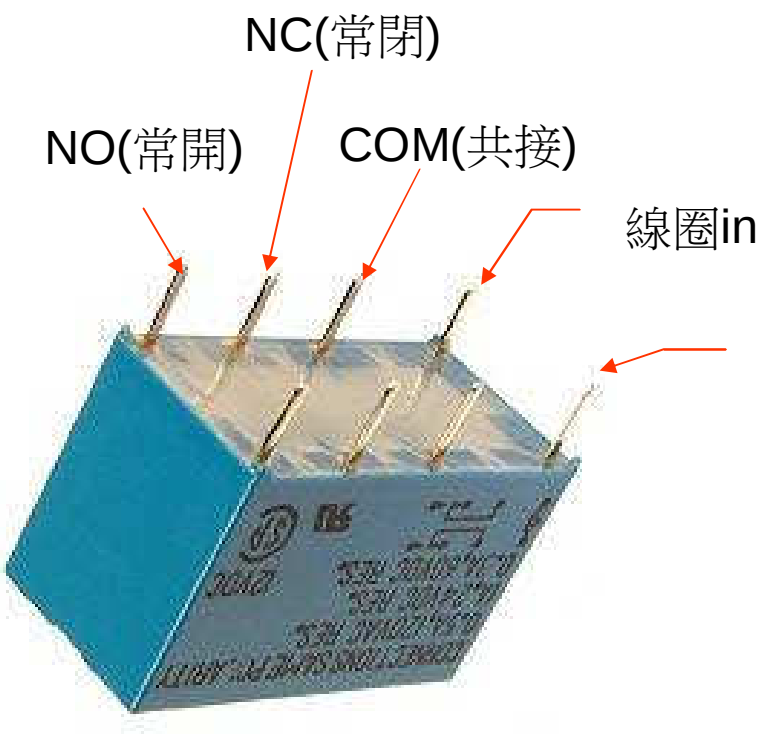
器材



- 麵包板
- #22單芯線少許
- 搖擺(捻跳)開關(1個)
- 微動開關(2個)
- 雙軸雙切繼電器(5V，2個)
- 發光二極體/LED(紅綠各1個)
- 9V電池組

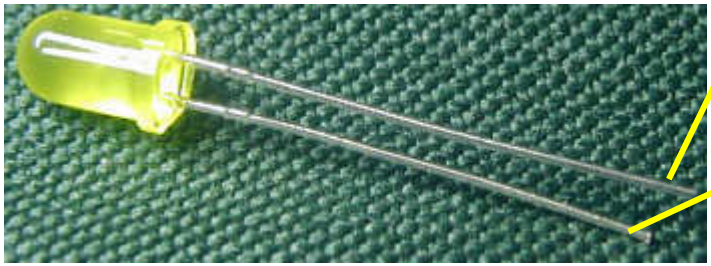


零件構造



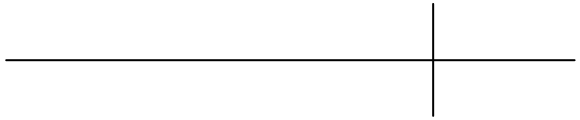
繼電器

微動開關



電路圖接線

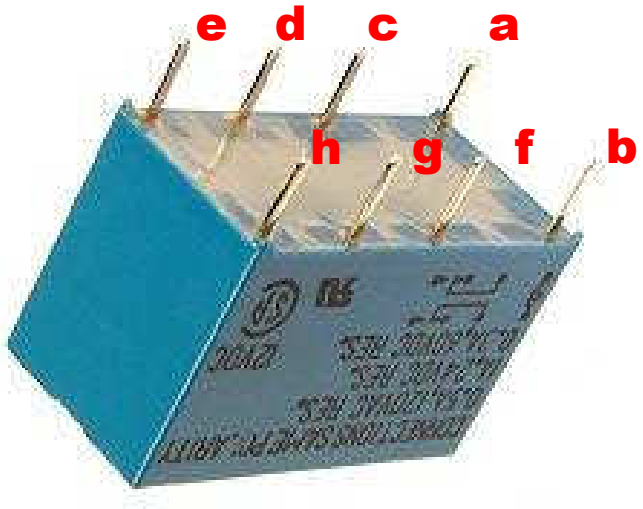
一條電線或麵包板中的銅箔

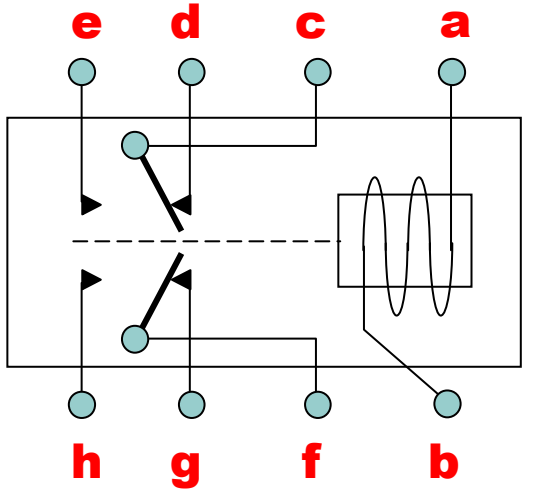


兩條獨立未相交的電線或銅箔

兩條相交的電線或銅箔，黑點即接合點

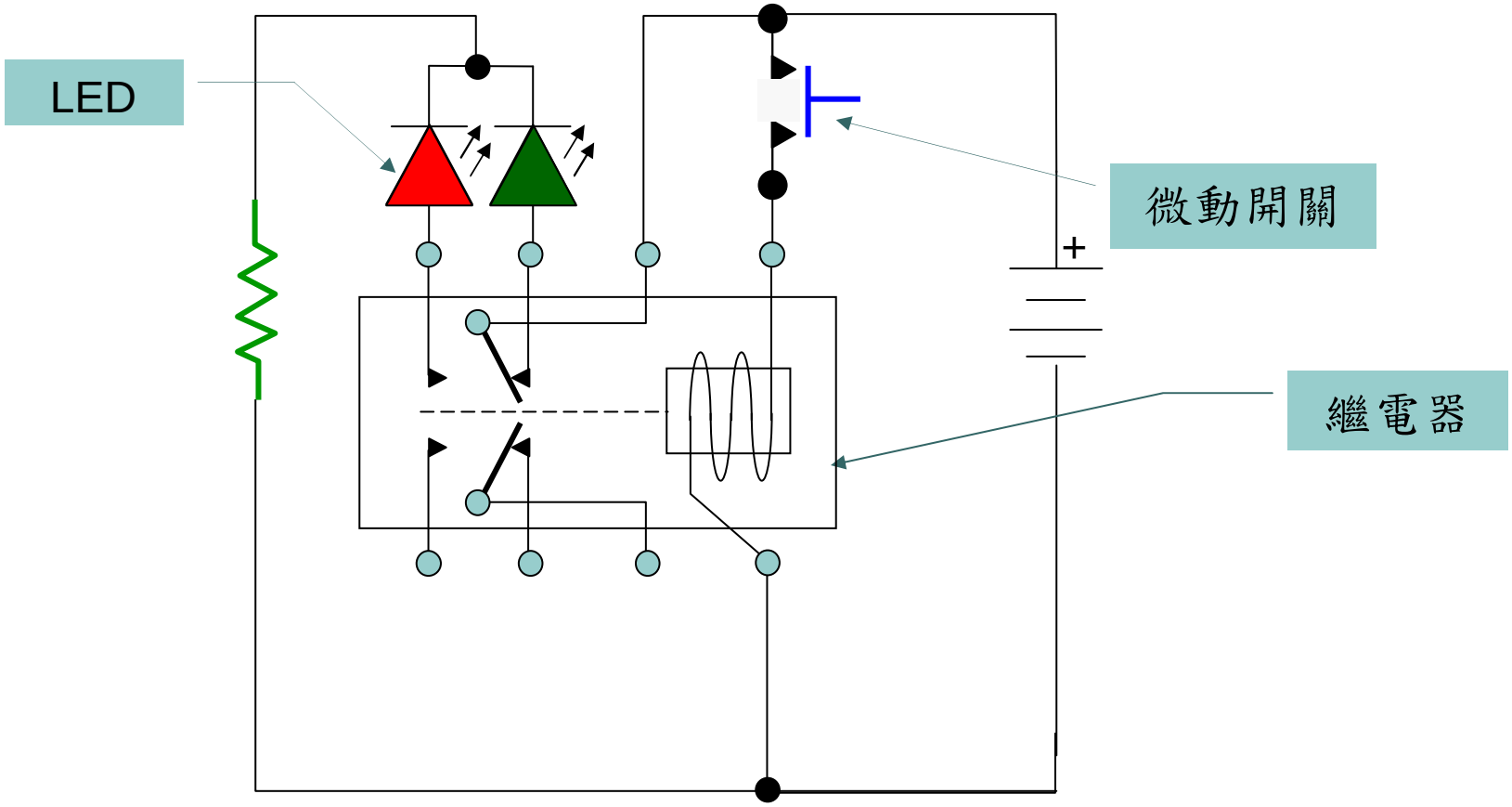
雙軸雙切的繼電器





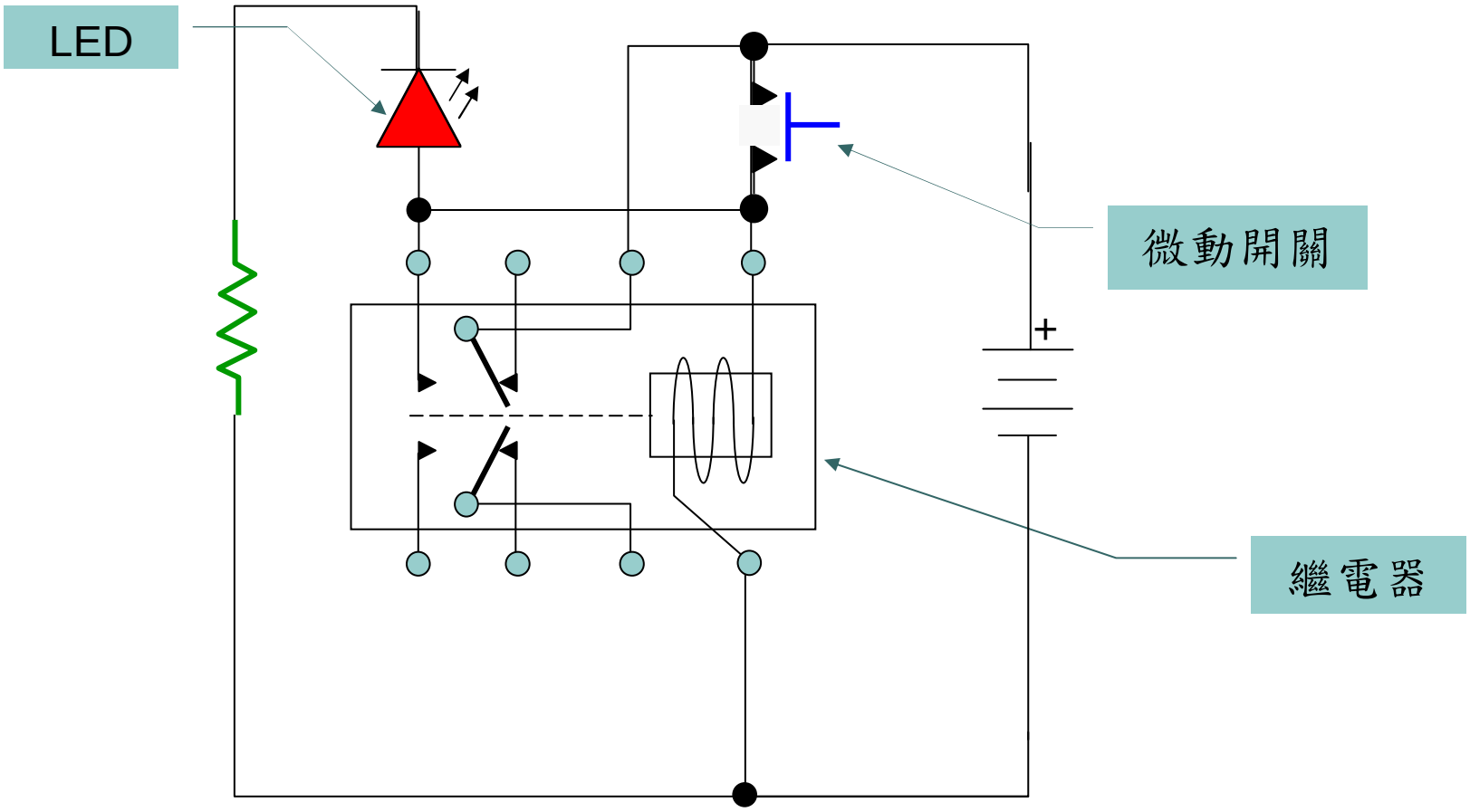
LED亮滅切換電路圖

專題一：
撥動微動開關切換接在繼電器上
的紅綠LED亮滅動作



自保電路圖

專題二：
按一次微動開關，LED可以保持不滅



互鎖電路圖

專題三：
以兩個繼電器完成個別的自保迴路，並互鎖對方的自保迴路