

DAY - 3

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4ALIBEC005

## Programmable Logic Controllers.

this are the major component in industries  
 → Relays to bits - The language used is store  
 uses symbology from the evolution from this  
 relays to using computeristic control.  
 manufacturing systems. Transition from  
 Relay is to bits.  
 1800 Arvid Davy - Original Relay  
 was constructed.

### Application of relay:

There are 3 switch:

- ① SPST switch - close - energize the relay.  
 open - deenergize the relay.
- ② Red Indicator: Aluminate when the  
 relay is deenergized.
- ③ Green Indicator: Aluminate when the  
 relay is energized.

### Power source.

- Alternating Current supply for relay coil.
- Direct current: Battery made of 4 cells  
 supply the DC → 115 AC rectifies into DC  
 and regulate into some DC voltages  
 25V, 5V etc.
- Control circuit: Itself a single  
 or double flow relay.

when the switch is closed current goes thro  
 ugh the coil, magnetic field oppose the  
 armature down.



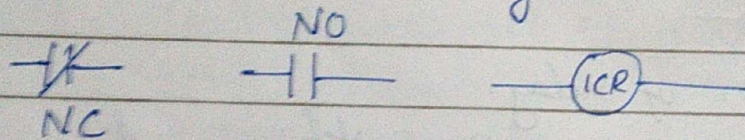
- Normally close contact - de-energized - coil
- Normally open contact - Energized - coil

- Contact relay: i.e.c relay: This contacts are used control the coil

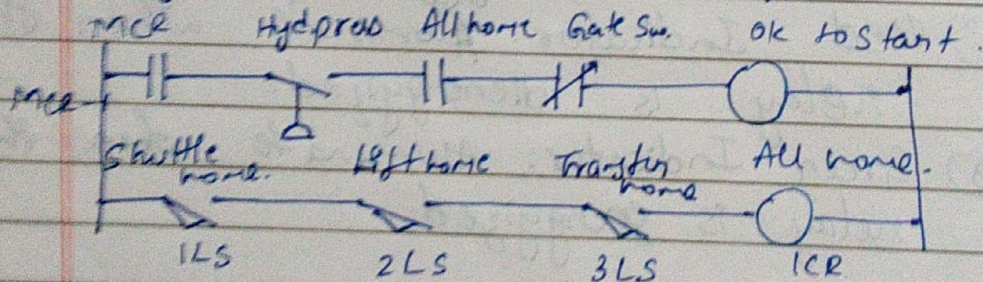
It is time for a small transition in how the contacts are designed.

→ Rotates a common contact b/w the normally closed and normally open.

→ Pulls a shorting bar b/w the normally closed and normally open contacts.



- Tiny piece of a much of the circuit.



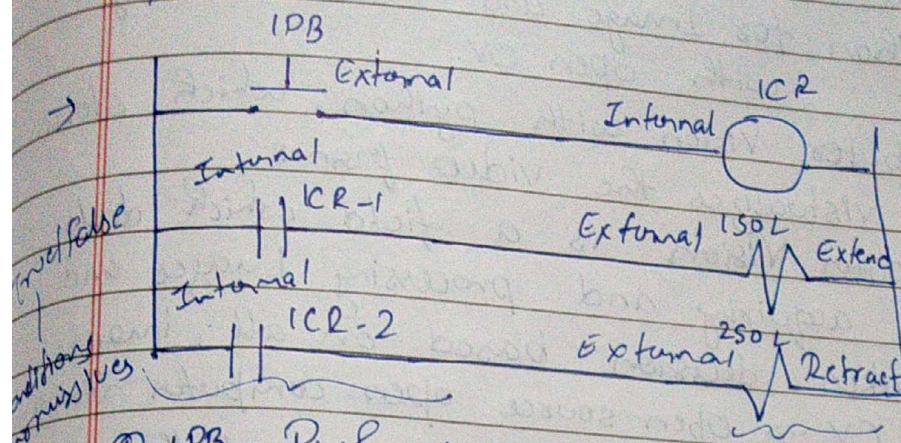
There are 2CR - Energize, K to start.  
ICR - home switch are in home, and energize the ICR-1

There are level switches open and closed by mechanical contact. There are with held by spring.

- All 3 are closed by hydraulic motions. Master control relay energize when all of the main safety system are back.
- Hyd - press - It is not going to close because the switch the has the pressure pushed it.



→ Gate Switch is open when the switch is open.



① IPB - Push button

Actions - ON/OFF

→ ICR-1 Load, 1SOL - Solenoid

→ ICR-2 close contact, energize contact - Solenoid. 2SOL in the circuit currently will energize.

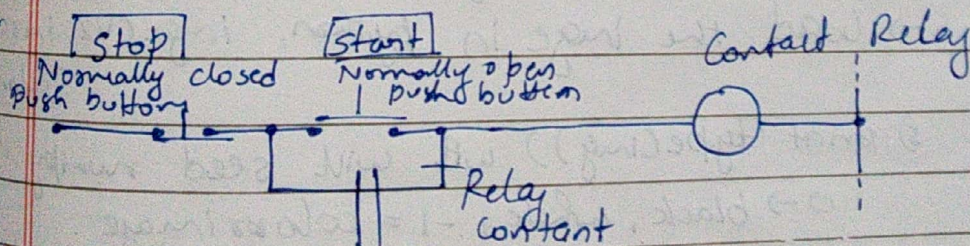
ICR-2 if ICR is off it is energized  
IPB & ICR-1 deenergized - open.

With IPB closed

Energized? - ICR & 1SOL.

True? = IPB & ICR-1.

False = ICR-2



Double-break contacts: This design provides better protection against contact welding than a single break design. It offers greater DC load breaking capability & better isolation. The feature also provides separation of N.O & N.C circuits. Double-break contacts open the circuits in 2 places, creating two air gaps & reducing the probability of welded contacts by more than 50% compared to a single-break design.



## • Python:

Python for Image and Video Processing  
with open CV.

→ Computer Vision with python, which stores and visualizes the video frame.

→ Computer Vision is a field which deals with acquiring and processing images and it makes decision based on all images.

→ open CV → Open source open computer vision instead of library we can use python.

→ To install:

1. Open the command line and type.

`pip install opencv-python`.

2. Then open a python session & try:

`import cv2`.

3. If you get no errors, that means you installed open CV successfully.

→ Loading, Displaying, Resizing and Writing images with python.

→ `import cv2 (library)`

→ Load the image in python. `img = cv2.imread()`

5) `print (type(img))` will give `numpy.ndarray` "galaxy.jpg"

0 → black, white, -1 = color image.

2 → transparency.

To display a img on window

`cv2.imshow("Galaxy", img)`.

For resizing: `resized_image = cv2.resize(img, (1000, 500))`

glob - It finds the path names of filename.

• Face Detection.

• Capturing Video.