

Sherpur Polytechnic Institute

Bhatshala, sherpur

Electronics Technology

Subject name : Automation Engineering And Plc

Subject code: 26875

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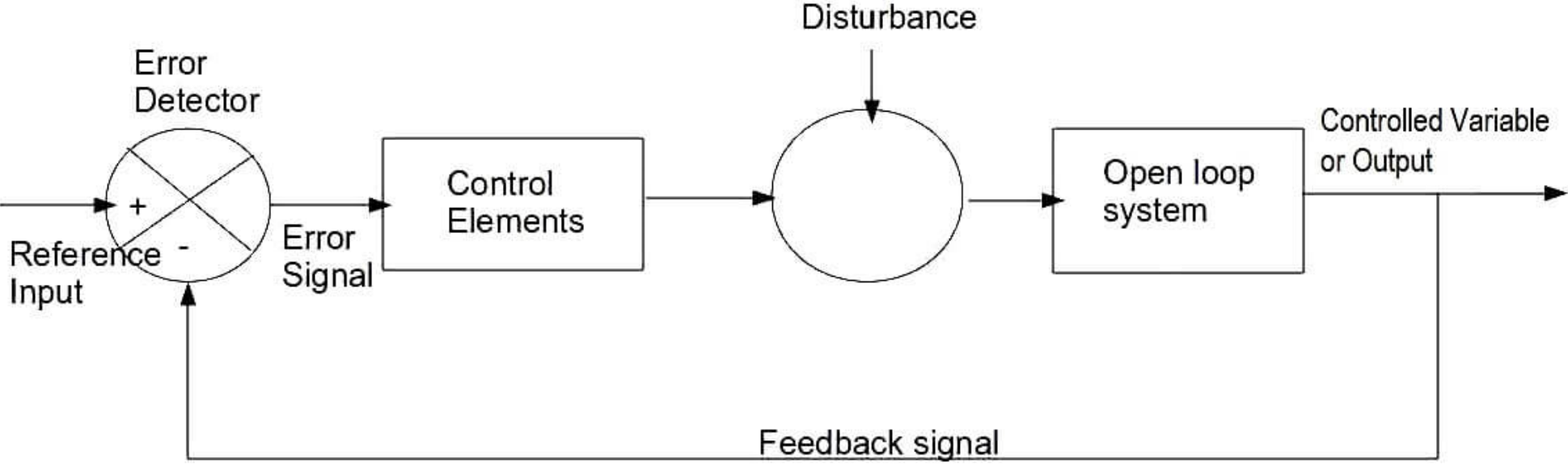
Chapter-01

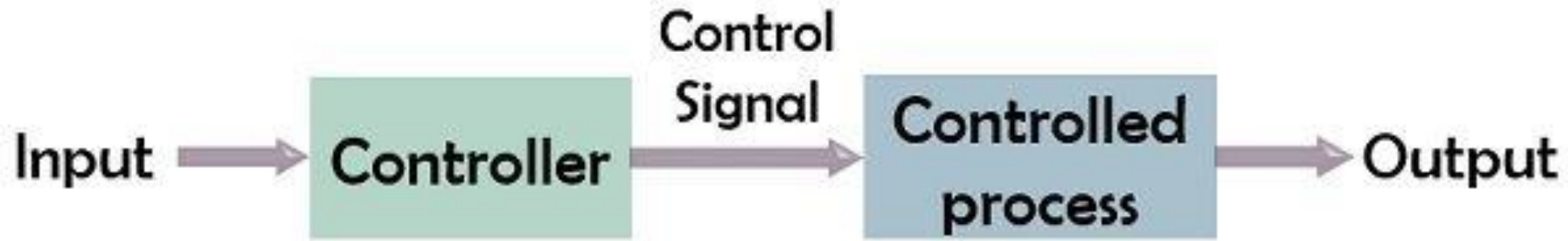
Control System

Control system: A Control system is a system or a set of devices that manages command and directs the behavior of other devices or systems. It works on the principle of the input-process-output cycle. since the output is controlled by varying input. They are widely used in electronics, automation, and engineering.



Closed Loop Control System





Open Loop Control System

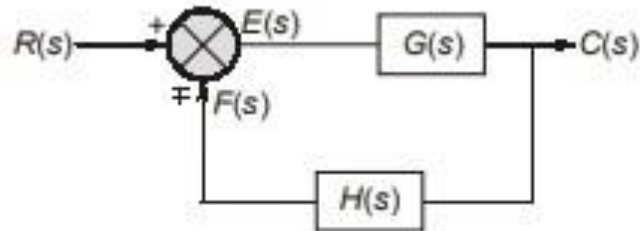
Electronics Coach

Transfer Function of Open Loop System :



$$G(s) = \frac{C(s)}{R(s)}$$

Transfer Function of Closed Loop System :



Transfer function of closed loop system

$$\frac{C(s)}{R(s)} = \frac{G(s)}{1 \pm G(s)H(s)}$$

$R(s)$ = Reference input

$C(s)$ = Controlled output

$E(s)$ = Actuating error signal

$$G(s) = \frac{C(s)}{E(s)} = \text{forward path transfer function}$$

$$H(s) = \text{feedback path transfer functions}$$

$$G(s)H(s) = \frac{B(s)}{E(s)} = \text{open-loop transfer function}$$

$$T(s) = \frac{C(s)}{R(s)} = \text{closed-loop transfer function}$$

$$\frac{E(s)}{R(s)} = \text{Error ratio}$$

$$\frac{B(s)}{R(s)} = \text{Primary feedback ratio}$$

From figure,

$$C(s) = E(s)G(s) \quad \dots(i)$$

$$E(s) = R(s) - B(s) = R(s) - H(s) C(s) \quad \dots(ii)$$

Eliminating $E(s)$ from equation (i) and (ii) we have

$$C(s) = G(s)R(s) - G(s)H(s)C(s)$$

or

$$\frac{C(s)}{R(s)} = T(s) = \frac{G(s)}{1 + G(s)H(s)}$$

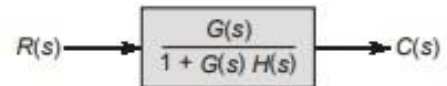


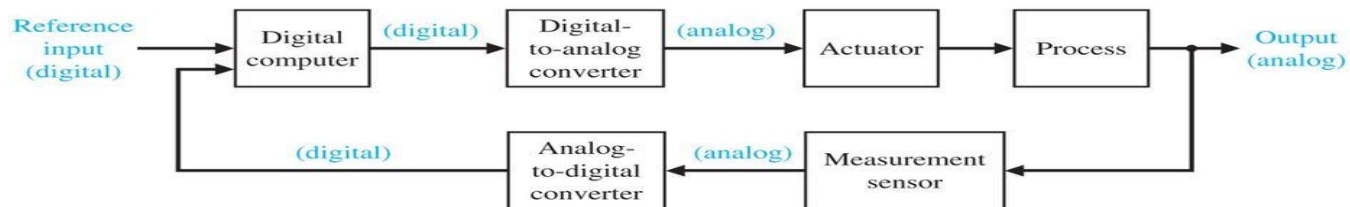
Fig. : Reduced block diagram

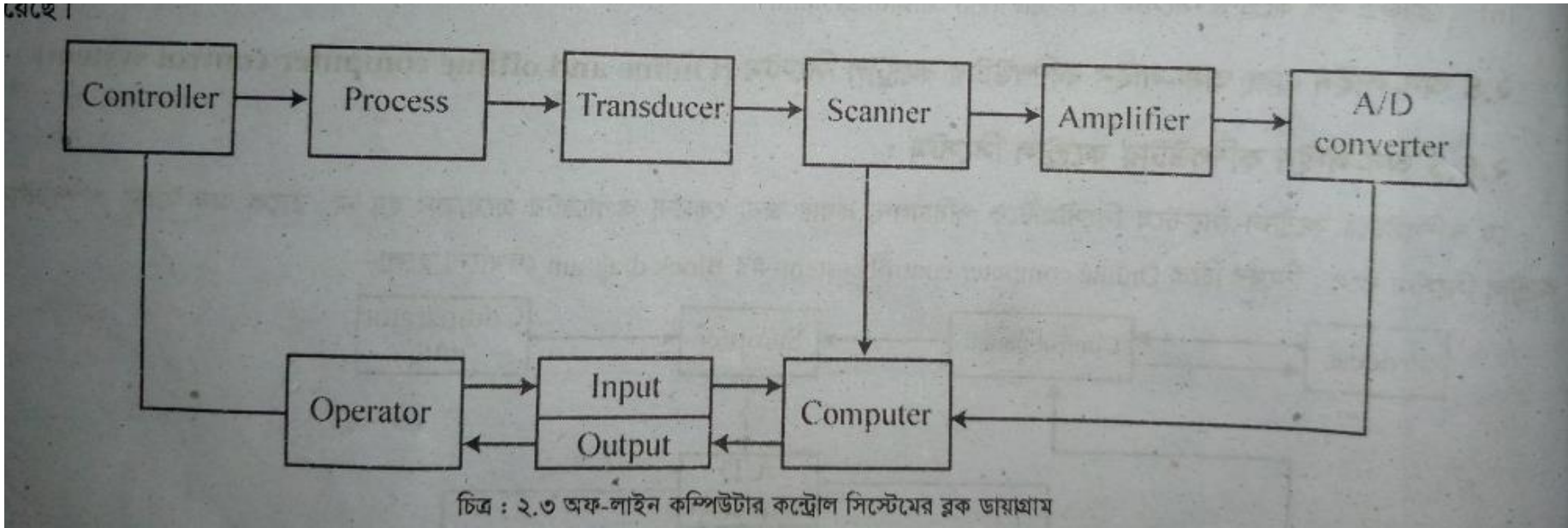
Chapter-02

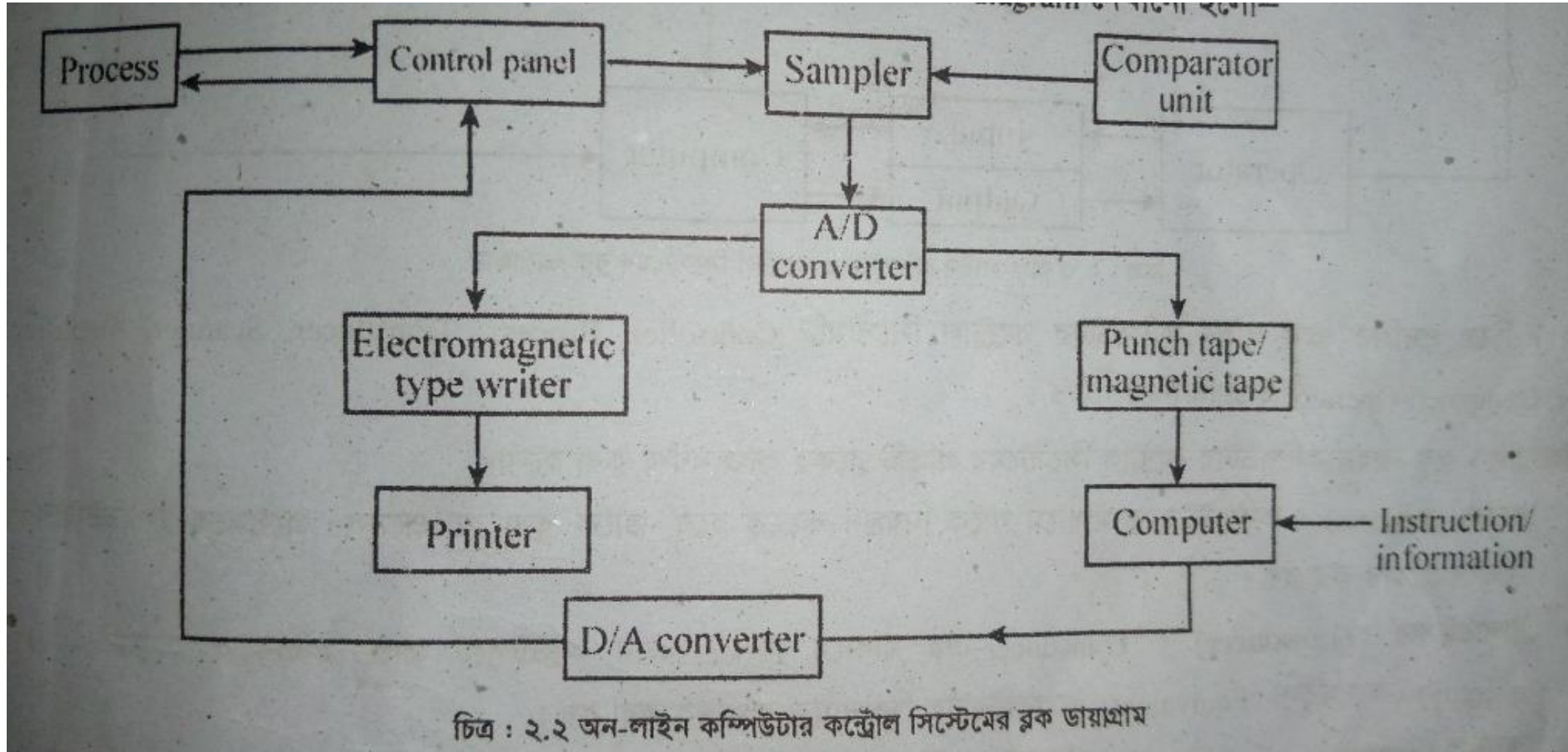
Computer Control System

Computer control systems : Computer control refers to the application of computer technology to control and regulate various systems.

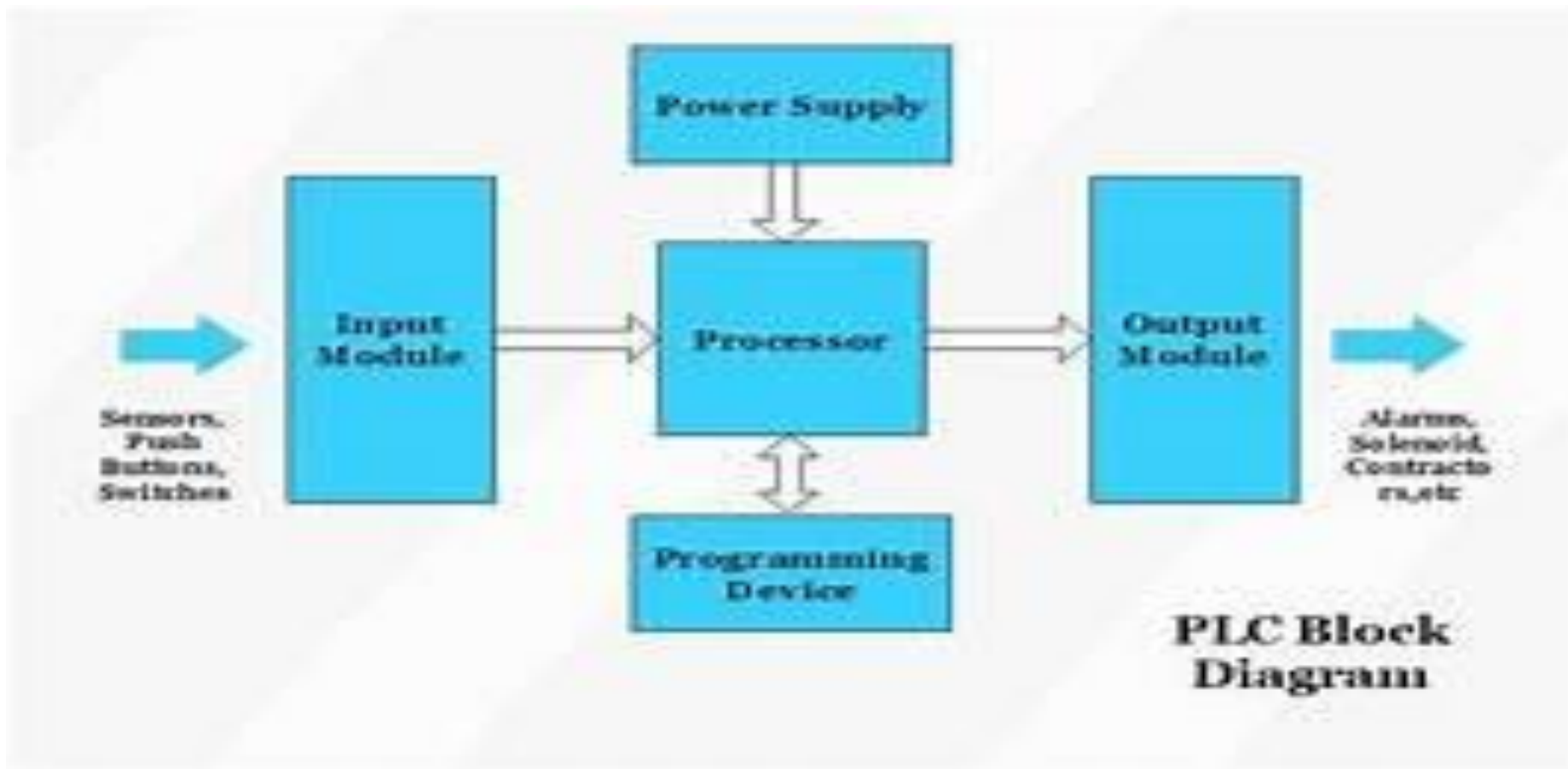
Figure 13.1 A block diagram of a computer control system, including the signal converters. The signal is indicated as digital or analog.



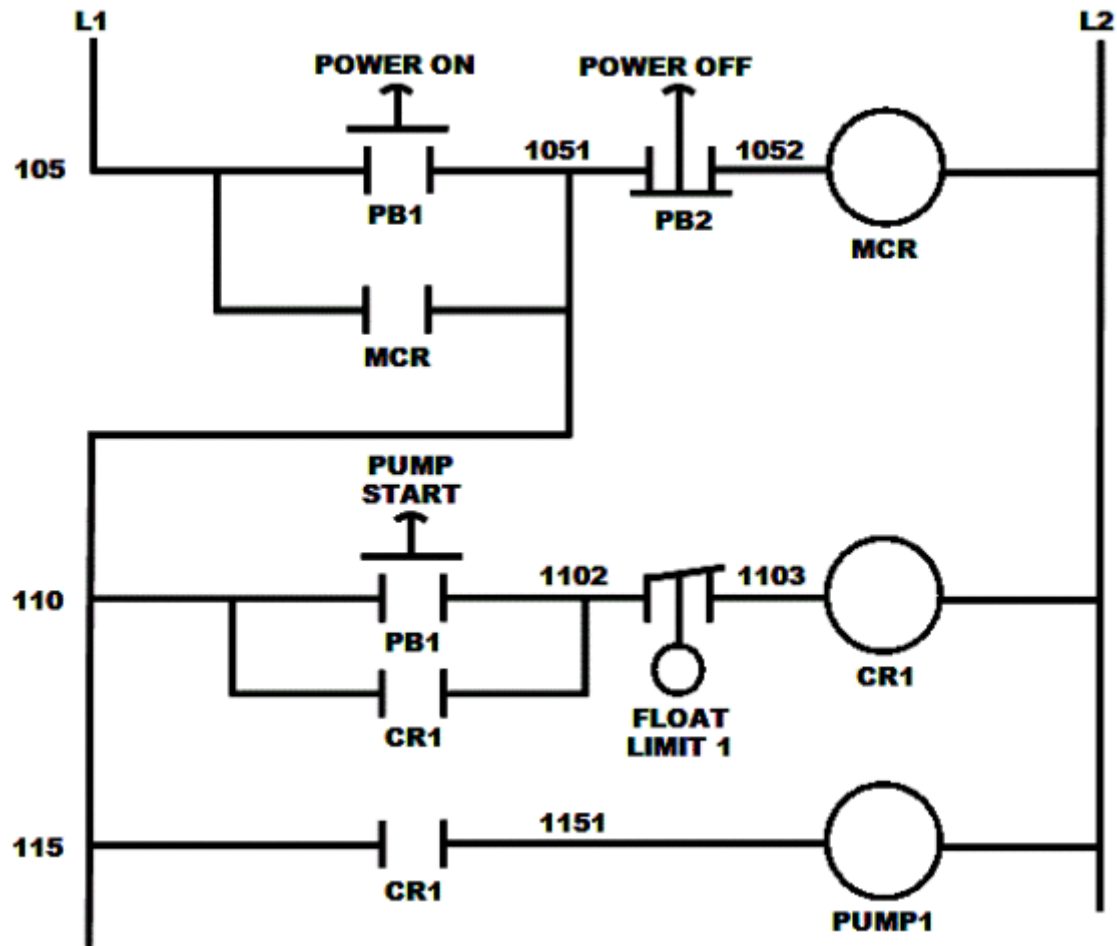




চিত্র : ২.২ অন-লাইন কম্পিউটার কন্ট্রোল সিস্টেমের ব্লক ডায়াগ্রাম



Relay Logic Ladder Diagram





THANK YOU!