Programmable Logic Controllers

Workshop at LPU , Phagwara
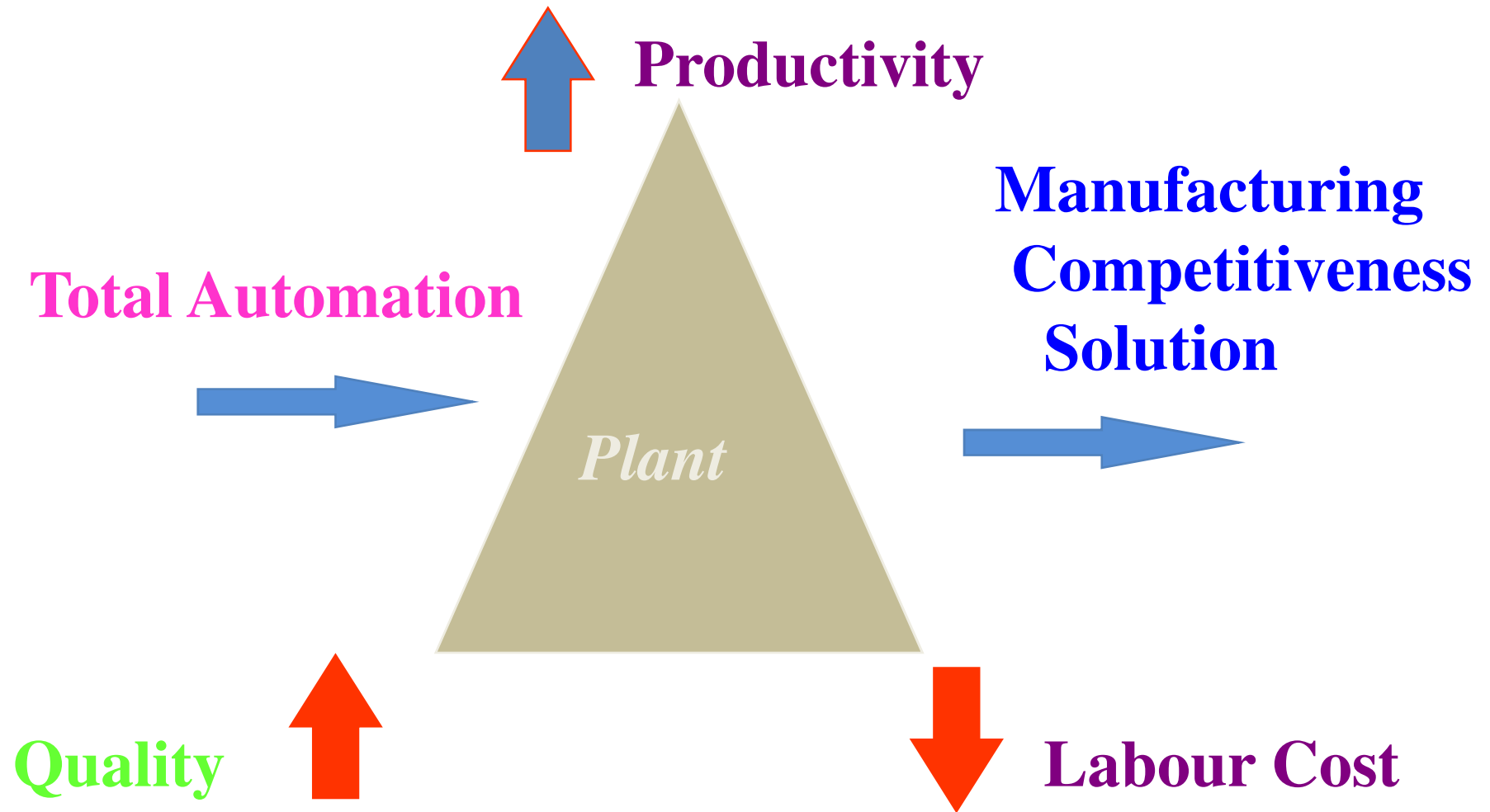## Day – 01

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Automation

Automation is basically the delegation of human control function to technical equipment for

- Increasing Productivity

- Increasing Quality

- Reducing Cost

- Increasing Safety in working conditions

Why Automation is Necessary for Industries ..

Productivity

Manufacturing Competitiveness Solution

Total Automation

Plant

Quality

Labour Cost

Define PLC

A **Programmable Logic Controller** is microprocessor or microcontroller

Based specialized computer, designed to operate in noisy industrial environment that can perform control functions of many types and complex in nature

Switch		Lamp
Limit Switch	PLC	Relay
Sensor		Motor

Block Diagram of PLC

Define PLC

A **Programmable Logic Controller** is specialized computer to control machines
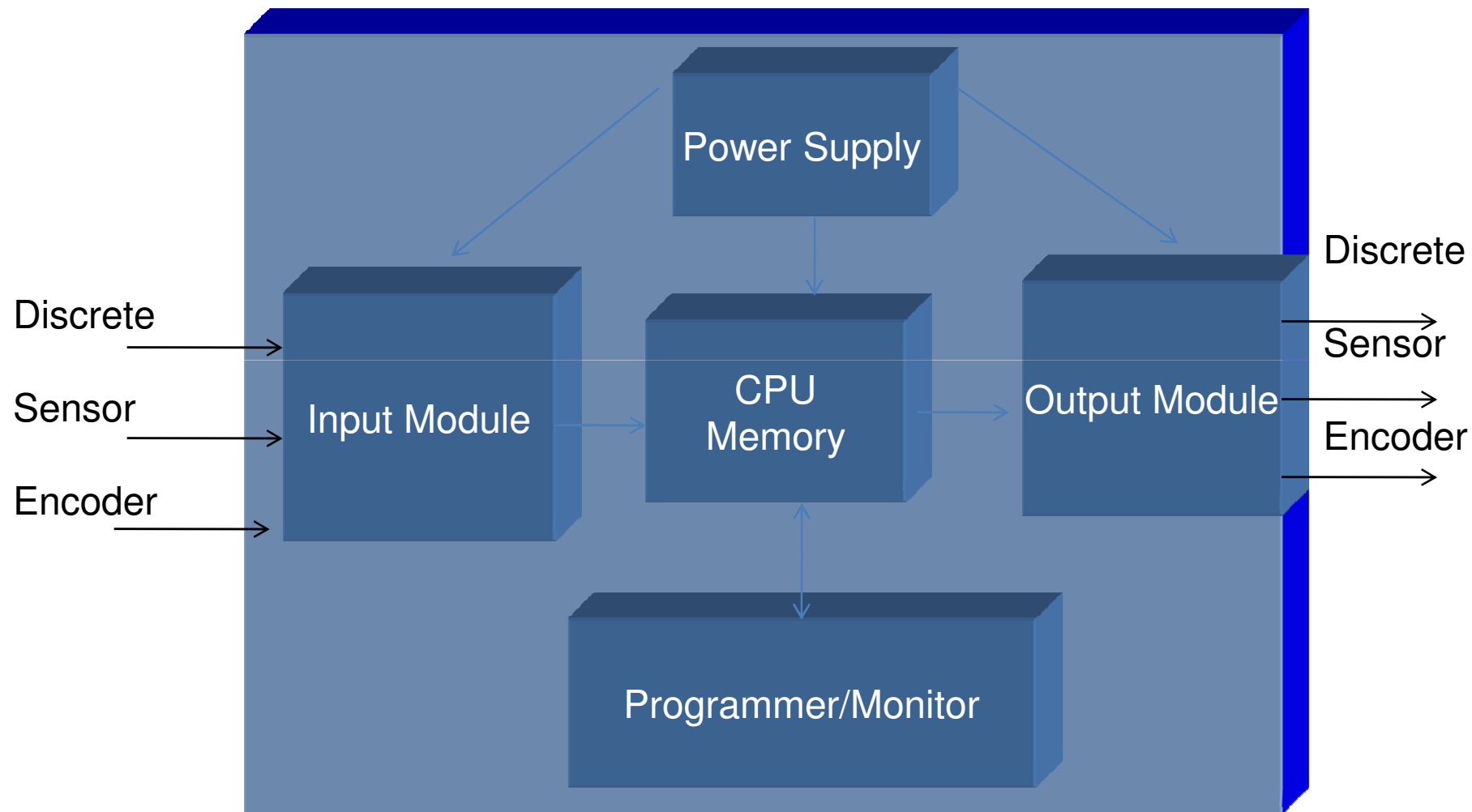
And processes.

It has programmable memory to store instruction and execute specific function

Like control, timing, counting, sequencing arithmetic and data handing operation

Switch		Lamp
Limit Switch	PLC	Relay
Sensor		Motor

Block Diagram of PLC

PLC Block Diagram:

Power Supply

Input Module

CPU Memory

Output Module

Programmer/Monitor

Discrete

Sensor

Encoder

Discrete

Sensor

Encoder

Detailed Diagram of PLC

PLC I/O Device

Switches

Relays

Sensor Feedback Voltage

Control Voltages

Encoder ADC

Digital Display, DAC, Stepper Motor

I/O Devices

History of PLC

In late 1960 and early 1970,the Programmable Logic Controller was developed and found place in automotive plants.

1968 : Idea

1969 : DICH Morley   (First PLC)

1973 : Micheal Greenberg   (First Commercial PLC)

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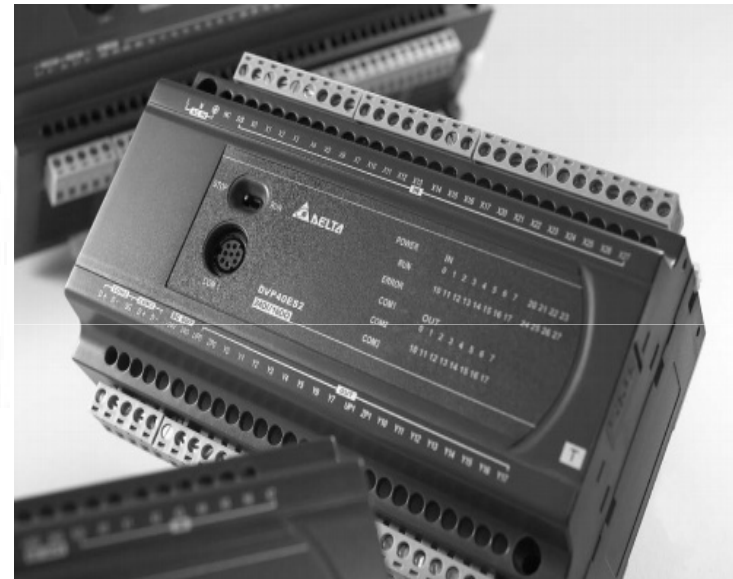1968 :   Idea

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Limitation of Relays

•It suffers from contact wear and reliability problem

•Being single input , multi-output, it is unsuited for designed for designing

•complex control and sequencing system for industrial processor

•The relay are hardwired i.e. relay are wired to perform specific function.

•When system needs to modified, the relay have rewired or whole system is to

replaced.

•Relay occupies large space.

•Relays takes large amount of time of actuate

•It is very difficult to diagnose a problem is relay control system

Solution:

PROGRAMMABLE LOGIC CONTROLLER

Companies Manufacturing:

ALLEN BRADLEY

DELTA

SIEMENS , ABB

Schneider

Mitsubishi

Cutler Hammer

Modicon, Hammer

De

PLC Panel:
Panel Designing

STEPS FOR DESIGNING: IMBUENT PLC PANEL

1. Select No. of Inputs and No. of Outputs

2. Select Indicators Type and Voltage Range

3. Select PLC Company ,Type , Model, I/P Ranges

4. Select Power Supply Option from SMPS

5. Select Relays, Types , Model No. , Relay Base

STEPS FOR DESIGNING: IMBUENT PLC PANEL

Select No. of Inputs and No. of Outputs

8 – Inputs, 6- Outputs

Select Indicators Type and Voltage Range

Red or Green, 220V

Select PLC Company ,Type , Model, I/P Ranges

Delta, DVP – 14SS2R

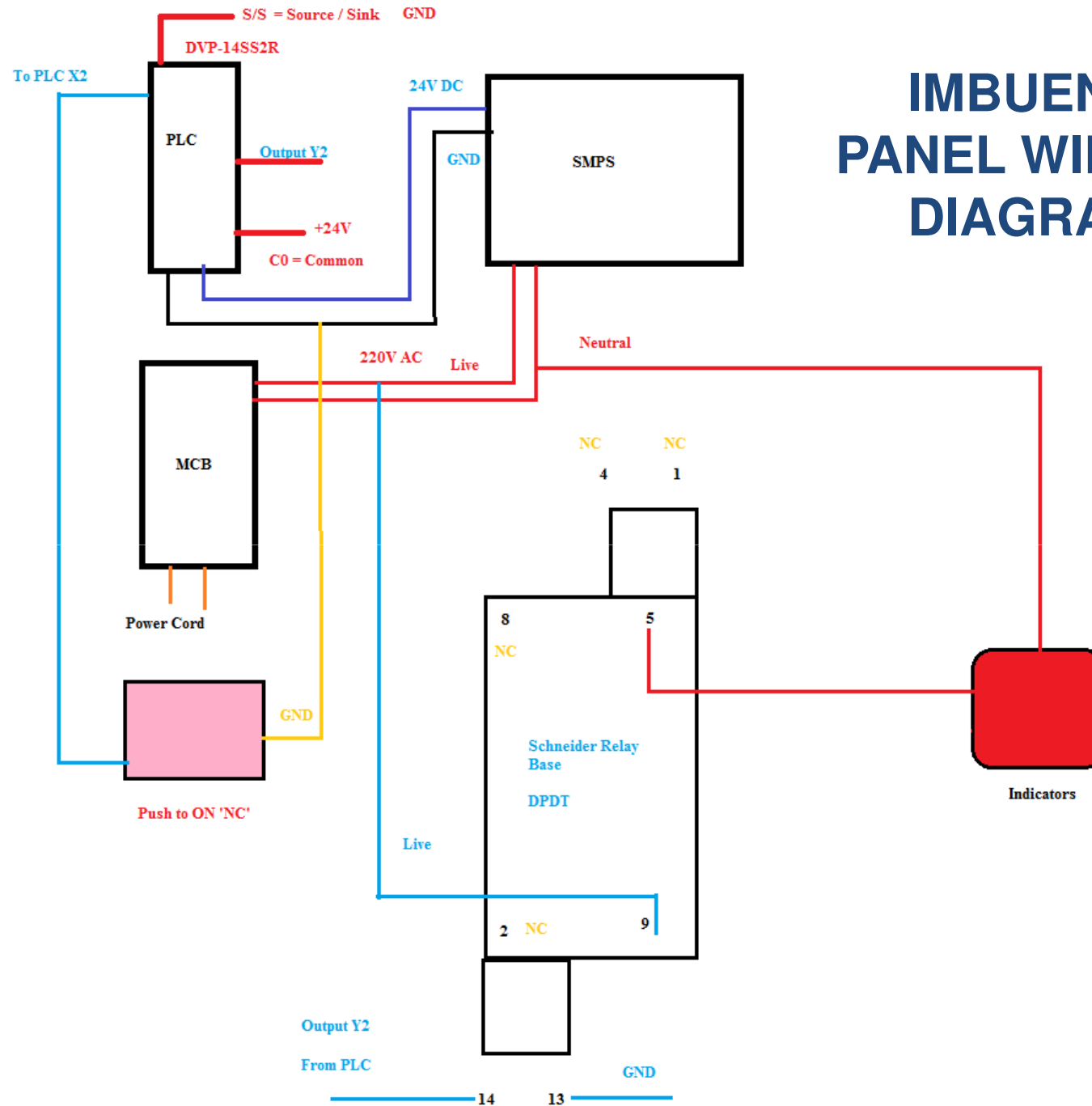**Select Power Supply Option from SMPS**

24V DC, 3 Amp

Select Relays, Types , Model No. , Relay Base
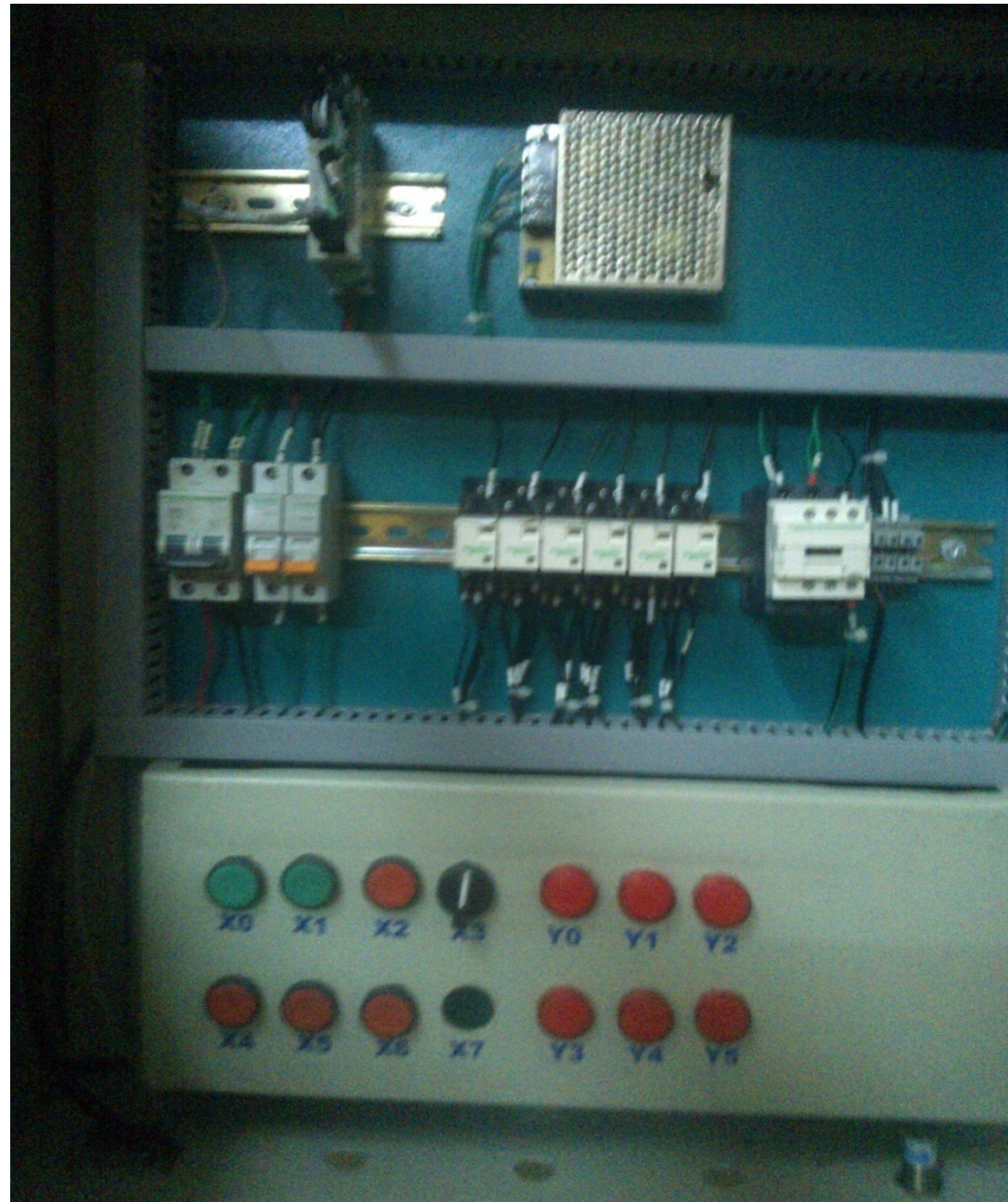
RXM2LB2BD , Schneider ,DPDT

MCB - Miniature Circuit Breaker
Schneider,16-A

IMBUENT:
PANEL WIRING
DIAGRAM

**IMBUENT
PLC PANEL**

THANKS

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