Scientech **Scientech 2425R** **Conveyor** **Control** **System** **with** **PLC** **and** **HMI** with conveyor belt application helps teach and familiarize students with real-life PLC and HMI application in automation and mechatronics industry. Operation and control of a conveyor using PLC and HMI is demonstrated. Various electro-mechanical components are controlled by a PLC and HMI.

Features

- Allen bradley PLC with 20 digital inputs , 12 digital outputs, 4 analog inputs, 2 analog outputs.
- 7" Human machine interface.
- This system includes control panel with E-stop button, green pushbutton, red pushbutton, selector switch intermittent buzzer, 24V DC power supply , MCB , ELCB, DPDT relay, tower light.
- Different types of sensors like thru - beam sensor, diffuse reflective sensor.
- Conveyor belt with DC brushless motor and its driver.
- DIN rail mounting for PLC.
- PC based ladder and HMI programming.
- User friendly and powerful instruction sets.
- Easy downloading of programs.
- Compact tabletop ergonomic design.
- Ready assignment details.
- Robust construction.
- PLC gateway for cloud connectivity (optional).

Scope of Learning

Program operation

- Study and use of diffusive reflective sensor and interfacing with PLC

- Study and use of through beam sensor and interfacing with PLC

- Study and use of DC Motor with controller and interfacing with PLC

- Conveyor control by PLC through ladder program

- Forward and reverse movement of conveyor belt control by PLC and HMI .

- Counting of objects using PLC and Sensors.

- Speed control of conveyor by PLC.

- NO (normally open) and NC (normally closed) instructions.

- Types of logic gates.

- Latch and unlatch bits.

- Types of timers (TON, TOFF and RTO).

- Types of counters (CTU and CTD).

- Types of compare instructions (greater than equal to, and less than).

- Types of math instructions (addition, subtraction, multiplication, and subtraction).

- Analog input and analog output instructions using MOV instruction.

Human Machine Interface (HMI)

- Human Machine Interface (HMI).

- Creating applications/screens in HMI.

- Downloading and uploading programs.
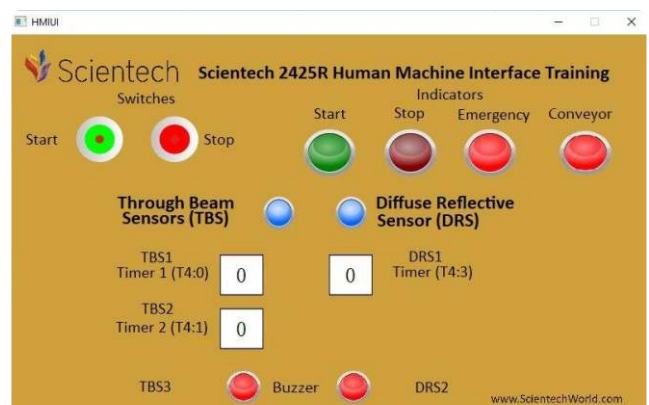
- PLC communication with HMI

Design screen for:

- Switch and indicator in HMI for communication with PLC.

- Timer in HMI for communication with PLC.

- Counter in HMI for communication with PLC

Software window
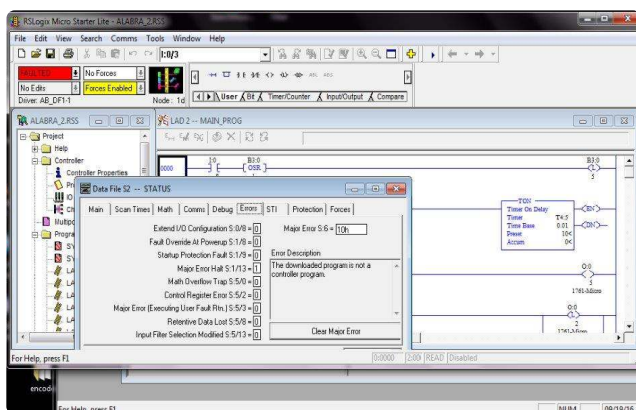
Programmable logic controller (PLC)

Human machine interface (HMI)

Technical Specifications

PLC

Make	:	Allen Bradley
Digital inputs	:	20 nos.
Digital outputs	:	16 nos.
Interfacing	:	Ethernet

HMI

Supply	:	24V DC
CPU	:	32 bits 400MHz RICS
Storage	:	128M flash + 64M DDRAM
Display size	:	7"
Resolution	:	800 X480 TFT LCD 65,536 colors
Interface	:	Ethernet
Touch screen	:	High precision four wire resistive

General Specification

Panel mounted e-stop button	:	1 no.
Panel mounted momentary push button (green)	:	1 no.
Panel mounted momentary push button (red)	:	1 no.
Panel mounted 2 way selector switch	:	1 no.
24V DC intermittent buzzer	:	1 no.
24V DC, 350W power supply unit	:	1 no.
MCB (double pole, 10A)	:	1 no.
ELCB (30mA)	:	1 no.
DIN rail mounted socket with DPDT relay	:	2 nos.
24VDC tower light	:	1 no.
Diffusive reflective sensor	:	3 nos.
Through beam sensor	:	2 nos.
DC brushless motor (with controller) and external speed control potentiometer	:	1 no.
Timing pulley and belt from motor to flat belt pulley (torque transmission)	:	1 no.
Mains Supply	:	230VAC

Subject to Change