Scientech

Universal PLC Training System with HMI

Scientech 2400K

Today, manufacturing processes have become a lot more efficient due to Internet of Things (IoT), intelligent automation, advance robotics and other smart factory initiatives. Despite rapid changes in technology, PLC continues to play a vital role in manufacturing and acts as a central processor for all real time decisions.

PLC and HMI have adapted well in modern Industry 4.0 manufacturing, automation systems and their programming will continue to play an integral role in the manufacturing processes. Further, the integrated HMI PLC is enabling lean automation-boosting efficiencies and reducing waste, both in terms of equipment and time.

Looking at career opportunities offered by Industry 4.0, Scientech has designed a Universal PLC Training System with HMI. Scientech 2400K is an ideal setup to study the working of PLC and HMI used for industrial applications. It has been designed to learn and practice:

- Wiring of PLC with different inputs and outputs.
- Push to ON switch, toggle switch, proximity sensor an input to PLC.
- Realistic simulation that can drive visual indicators, audio indicators, and DC motor.
- Communication of PLC with HMI for monitoring and controlling.

Features

- 7” Human Machine Interface (HMI) display.
- PLC with 16 digital inputs, 16 digital outputs with RS232 communication facility.
- Open platform to explore wide PLC and HMI applications.
- Industrial look & feel.
- Toggle switches, push to ON switch, proximity sensor, visual indicator, audio indicator, and DC motor.
- Experiments configurable through patch board.
- Powerful instruction sets.
- Several sample ladder and HMI programs.
- PC based ladder and HMI programming.
- Extremely easy and student friendly software to develop different programs.
- Easy downloading of programs.
- Practice troubleshooting skills.
- Compact tabletop ergonomic design.
- Robust construction.
- PLC gateway for cloud connectivity (optional Scientech 2400 *i*PLC).

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Scope of Learning

- Exposure to technology of Programmable Logic Controller (PLC) and understanding the importance of automation in industries.
- Students will get familiarized with a variety of ladder logic instructions to create complete PLC program from scratch.
- Study the difference between digital and analog signals and how to bring them into a PLC, process them, and send them back out.

PLC hardware

- PLC configuration.
- Source and sink concept.
- PLC history.
- Input/output configuration.
- Installation.
- Switches and sensor interfacing.
- Actuator interfacing.

PLC operation

- Sequence of operation.
- Program scans cycle.
- Addressing example.
- Upload/download/monitoring.

Program operation

- NO (normally open) and NC (normally closed) instructions.
- Types of logic gates.
- Set and reset bits.
- Timers.
- Counter.
- Compare instructions .
- Math instructions.

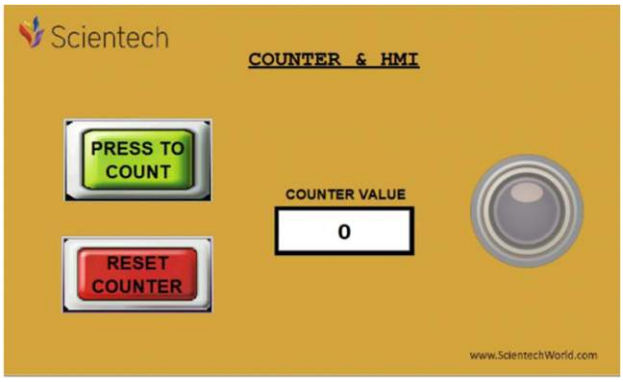
Human Machine Interface (HMI)

- Human Machine Interface (HMI).
- Creating applications/screens in HMI.
- Downloading and uploading programs.

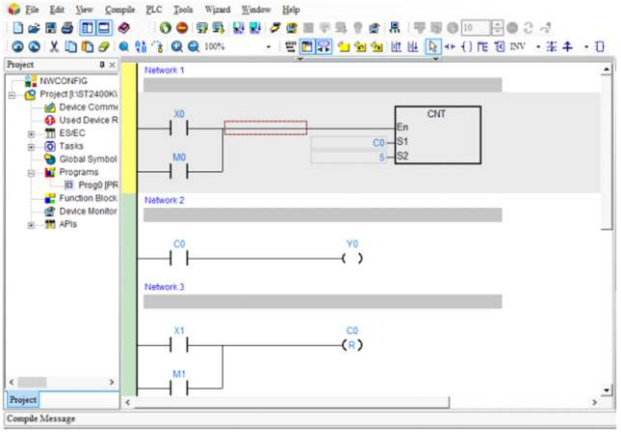
Design screen for:

- Switch and indicator in HMI for communication with PLC.
- Timer in HMI for communication with PLC.
- Counter in HMI for communication with PLC.
- Trend in HMI for communication with PLC.
- Alarm in HMI for communication with PLC.

Human machine interface HMI software window



Programmable logic controller PLC software window



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Technical Specifications

Programmable Logic Controller PLC

Digital inputs	:	16 nos.
Digital outputs	:	16 nos.
Program size (words)	:	4096.

Boolean execution speed

Sec. per instruction	:	0.33 µs/sequential instruction in average
Interfacing	:	RS-232/RS-485 ports
Expansion module	:	Expandable

Human Machine Interface (HMI)

HMI Supply	:	+24V DC
CPU	:	32-bits 400MHz RISC
Interface	:	RS232/RS485
Storage flash	:	128MB
DDRAM	:	64MB
Display size	:	7 inch
Resolution	:	800 × 480 TFT LCD 65, 536 colors
Touch screen	:	High precision four-wire resistive

General Specification

Toggle switches	:	8 nos.
Push to ON switches	:	5 nos.
LED's	:	8 nos.
Buzzer	:	1 no.
DC motor	:	1 no.
Proximity sensor	:	1 no.

Accessories

• 8 Pin DIN cable to RS232 cables	:	2 nos.
• A to B cable	:	1 no.
• RS232 to USB converter	:	1 no.
• Mains cord	:	1 no.
• Patch cords	:	30 nos.

Subject to Change

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