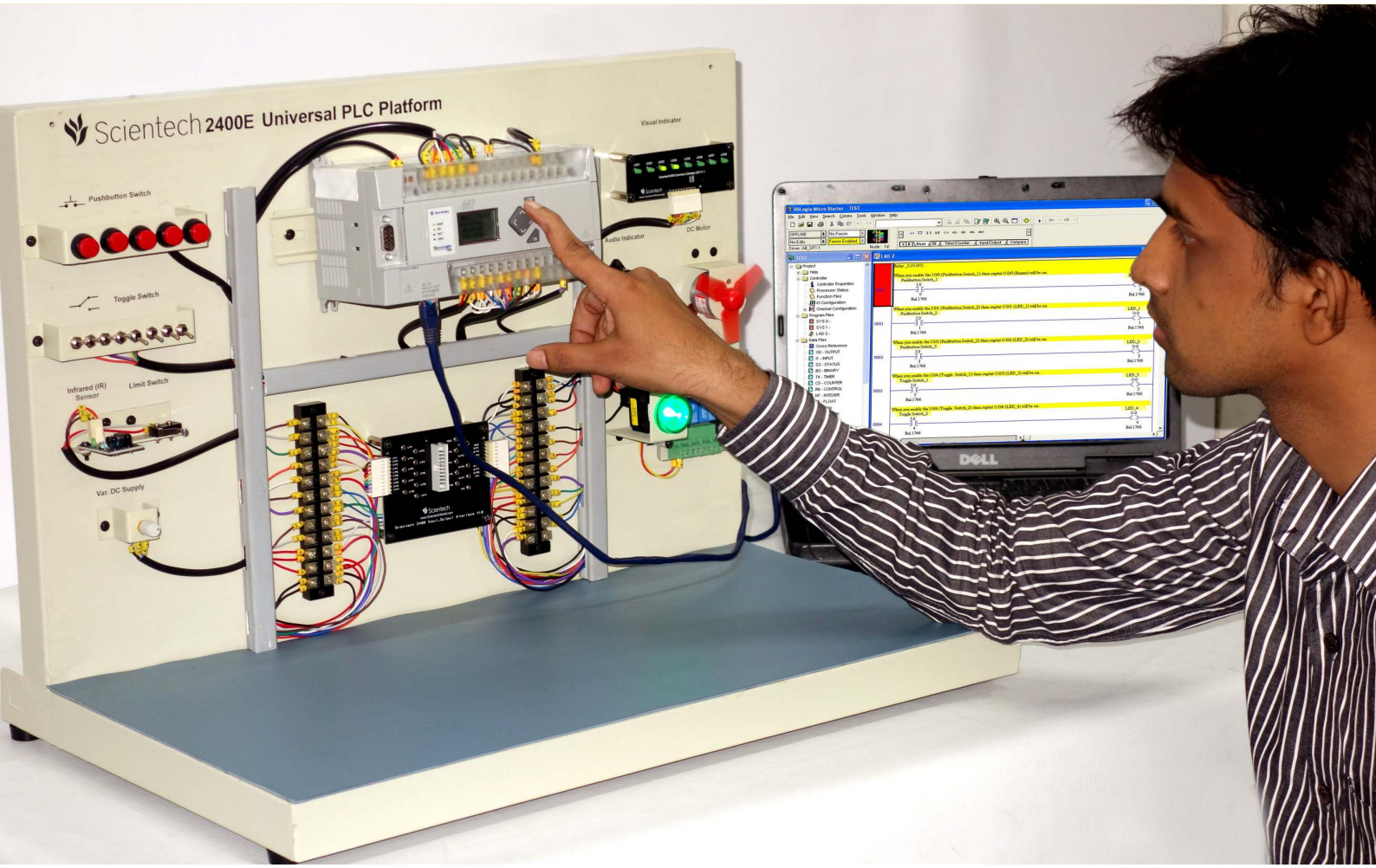
Scientech

Universal PLC Platform

Scientech 2400



In today's environment of automation, the importance of PLC has rapidly increased. Scientech 2400 Universal PLC Platform is an ideal setup to study the working of PLC's used for industrial applications. Scientech 2400 has been designed to learn and practice -

- Wiring of PLC with different inputs and outputs.
- Push to ON switch, Toggle switch, Limit switch, IR Sensor as an input to the PLC.
- Realistic Simulation that can drive visual indicators, audio indicators, and DC Motor, Pilot Lamp, Relay card.

Features

- **Freedom to select PLC of different makes**
- **Open platform to explore wide PLC applications**
- **Industrial look & feel**
- **Toggle switches, Push to ON switch, Limit switch, IR Sensor , LED's , Buzzer, DC Motor, Pilot Lamp, Relay card**
- **Din rail mounting for PLC**
- **Powerful instruction sets**
- **PC based Ladder programming**
- **Extremely easy and student friendly software to develop different programs**
- **High execution speed**
- **Several sample Ladder programs**
- **Choice of PLC and expansion modules**
- **Easy downloading of programs**
- **Practice Troubleshooting skills**
- **Compact tabletop ergonomic design**
- **Ready Experimental details**
- **Robust Construction**
- **Online Product Tutorial**

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Scope of Learning

Study and use of:

- Ladder programming
- NO (Normally Open) and NC (Normally Closed) instruction
- Set and reset bit
- Timers
- Counter
- Compare instruction
- Interrupt
- Subroutine
- Math function

Technical Specifications

Toggle switch	:	8 nos
Push to ON switch	:	5 nos
IR Sensor	:	1 no
Limit Switch	:	1 no
LED	:	8 nos
Buzzer	:	1 no
DC Motor	:	1 no
Pilot Lamp	:	1 no
Relay card	:	1 no
Operating Temp.	:	0-40°C, 80 % RH
Dimension (mm)	:	W 600 x H 390 x D 300
Weight	:	8 Kg (approximately)
Product Tutorial	:	Online (on www. ScientechLearning.com)
Included Accessories	:	Interfacing cable-1 no.
		Mains cord-1 no.

Scientech 2400S Signal Conditioning for PLC (optional)

Technical Specifications

Differential amplifier	- 2 gain
Non inverting amplifier	- 3 gain
Switching circuit	- Logic 0:0V, Logic 1:24V
Frequency to voltage converter	- Low frequency 0 to 400 Hz:0 to 4.5V High frequency 0 to 5KHz:0 to 4.5V
Thermocouple amplifier	- 10 gain

Switches & Sensors (Optional):

Note : For interfacing a Sensor module with PLC Scientech 2400S required

Switches:

SS23 Thumbwheel switch:

Application:

- Digital Control System Stepper motor speed control

Scope of Learning:

- Learn the concept of Number system
- Interfacing with PLC
- Ladder programming of Thumbwheel switch

Digital Sensor :

SS16 Capacitive Proximity Sensor

Application:

- Detecting flow of material
- Belt Breakage detection
- Detection empty cartons

Scope of Learning:

- Concept of Capacitive Proximity Sensor
- Interfacing with PLC
- Ladder programming of Proximity Sensor for detection of metallic and non metallic objects.

SS17 Inductive Proximity Sensor

Application:

- Railroad position sensing • Position Sensor
- Speed sensing of machine • Metallic objets detection

Scope of Learning:

- Concept of Inductive proximity Sensor
- Interfacing with PLC
- Ladder programming of Proximity Sensor for detection of metallic objet

Sensors (Optional):

Note : For interfacing a Sensor module with PLC Scientech 2400S required

SS11 PIR Sensor

Application:

- Alarm systems
- Robotics

Scope of Learning:

- Concept of PIR Sensor
- Interfacing with PLC
- Ladder programming of PIR Sensor for human body detection

SS32 Fire Sensor

Application:

- Fire extinguisher
- Fire avoider

Scope of Learning:

- Study of photodiode as IR receiver
- Interfacing with PLC
- Ladder programming for Fire Sensor

Analog Sensor :

SS01 Temperature Sensor

Applications:

- Food industries
- Steel industries

Scope of Learning

- Study of Temperature Sensor like LM35, RTD, Thermocouple
- Interfacing with PLC
- Ladder programming for Temperature Sensor

SS04 Pressure Sensor

Application:

- Pressure sensing
- Altitude sensing
- Leak testing

Scope of Learning:

- Study of Pressure Transducer
- Interfacing with PLC
- Ladder programming for Pressure Sensor

SS13 Magnetic Sensor (Hall Sensor)

Application:

- Current sensing
- Power sensing
- Proximity detection
- Speed detection

Scope of Learning:

- Concept of Hall effect Sensor
- Interfacing with PLC
- Ladder programming of Hall effect Sensor for Magnet pole detection

SS24 Level Sensor

Application:

- Dairy Industry
- Water & Waste Water Management

Scpe of Learning

- Study of Capacitive level Sensor
- Interfacing with PLC
- Ladder programming for Level Sensor

SS33 Flow Sensor

Application

- Cooling Process in boilers
- Controlling the supply of solution in a PC board cleaner

Scope of Learning

- Study of Flow Sensor
- Interfacing with PLC
- Ladder programming for Flow Sensor

Actuator (Optional):

Note : For interfacing a Actuator module with PLC Scientech 2400S required

SS 54 Relay

Application:

- Switching
- Motor Control

Scope of Learning:

- Study of Relay
- Interfacing with PLC
- Ladder programming for Relay

SS 55 Heater

Application:

- Used in Packing industries
- Used in Batching process

Scope of Learning:

- Study of Heater Interfacing with PLC
- Ladder programming for Heater

SS56 Stepper Motor

Application:

- Robotics
- Solar tracking system

Scope of Learning:

- Study of Stepper motor
- Interfacing with PLC
- Ladder programming for Stepper motor

SS57 Seven Segment Display

Application:

- Digital clock
- Calculator

Scope of Learning:

- Study of Seven segment display
- Interfacing with PLC
- Ladder programming for Seven segment display

Servo Motor (16Kg-cm)

- (Compatible with Transistorized PLC)

Application:

- Position control in Robotics

Scope of Learning:

- Study of Servo motor
- Interfacing with PLC
- Ladder program for Servo motor

Contactor

Application:

- Lighting control
- Magnetic starter

Scope of Learning:

- Study of Contactor
- Interfacing with PLC
- Ladder programming for Contactor

Solenoid Valve

Application:

- Used in air power pneumatic to control cylinder
- Used in refrigeration

Scope of Learning:

- Study of Solenoid valve
- Interfacing with PLC
- Ladder programming for Solenoid valve

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Application modules (Optional):

Scientech 2421 Water Level Control by PLC

Scope of Learning

- Study of water level.
- Study and use of timers and memory bit.
- Water level control by PLC through ladder program.

Scientech 2422 Elevator Control by PLC

Scope of Learning

- Study of elevator.
- Study and use of latch switches and timers.
- Elevator control by PLC through ladder program.

Scientech 2423A Traffic Light Control by PLC

Scope of Learning

- Study of traffic light.
- Study and use of memory bit and timers.
- Traffic light control by PLC through ladder program.
- Study of signal indications for two direction.

Scientech 2423B Traffic Light Control by PLC

Scope of Learning

- Study of traffic light.
- Study and use of timers.
- Traffic light control by PLC through ladder program.
- Study of all three signals Red, Green and Orange i.e. Ready, go and stop. Having signal indications for all direction at any square.

Scientech 2424 Temperature Control by PLC

(*Analog module is required)

Scope of Learning

- Study of Temperature control.
- Study and use of compare instruction.
- Study and use of Temperature Sensors and voltage to current Convertor.
- Study and use of controlling a heater and fan.
- Temperature control by PLC through ladder program

Scientech 2425 Conveyor Control by PLC

Scope of Learning

- Study of conveyor
- Study and use of memory bit, timers, counters, compare instruction
- Study and use of IR Sensor, Proximity Sensor, push to on switch
- Study and use of DC motor
- Conveyor control by PLC through ladder program
- Learn to count metallic container using a proximity switch.
- Learn to run and control conveyor in manual and AUTO mode using a PLC.
- Learn to control direction a of DC motor.

Scientech 2426 Speed Control of DC Motor by PLC

(*Analog module is required)

Scope of Learning

- Study of DC motor.
- DC motor control by PLC through ladder program.
- Study and use of PWM (Pulse Width Modulation) and voltage to frequency convertor.
- Learn to run DC motor in clockwise and anticlockwise direction.
- Learn to change the speed of DC motor.

Scientech 2427 Motor & Switches Control by PLC

Scope of Learning

- Study of Stepper motor, thumbwheel switch and limit switch.
- Stepper motor, thumbwheel switch and limit switch control by PLC through ladder program.
- Study of speed control of Stepper motor using a thumbwheel switch.
- Learn to step (position) control of Stepper motor using a limit switch.
- Learn to run Stepper motor in clockwise and anticlockwise direction.
- Study and use of PWM (Pulse Width Modulation).

Scientech 2428 Bottle filling plant Control by PLC

(*Requires PLC with 12 digital input & 8 digital output)

Scope of Learning

- DAQ card interface with PLC.
- Study and use of bottle filling station.
- Control of bottle filling station using PLC and DAQ.
- Study and use of Sensor and actuators used in bottle filling plant.
- Bottle filing plant control automatically and manually.

Bottle filling plant

Scientech 2429 Study of Star Delta & Direct On Line (DOL) Starter by PLC

Scope of Learning

- Study of Start Delta Motor Starter
- Study of Direct Online Starter
- Study and use of latching
- Study and use of Timer
- Ladder program for Star Delta Motor Starter control by PLC
- Ladder program for Direct Online Starter control by PLC

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3D Interactive Training System with PLC (Optional)

Sorting : Transport cases from the entry bay to the elevators, sort them by height

Batching : Mix three primary colors in order to obtain a desired color(red,green,blue)

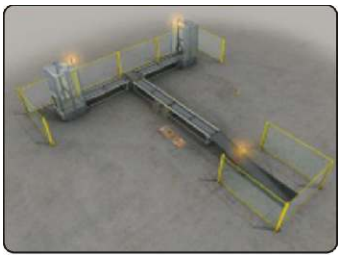
Palletizer : Palletizer cases up to three layers

Pick & Place : Place parts inside boxes through a three axes manipulator

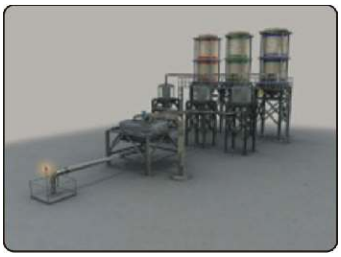
Automatic Warehouse : Transport, store and retrieve boxes from a rack

(*Requires PLC with 12 digital input & 8 digital output)

Sorting



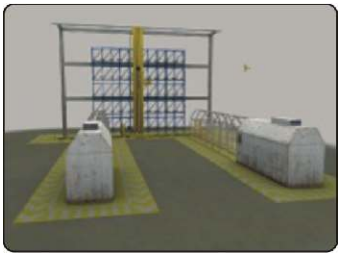
Batching



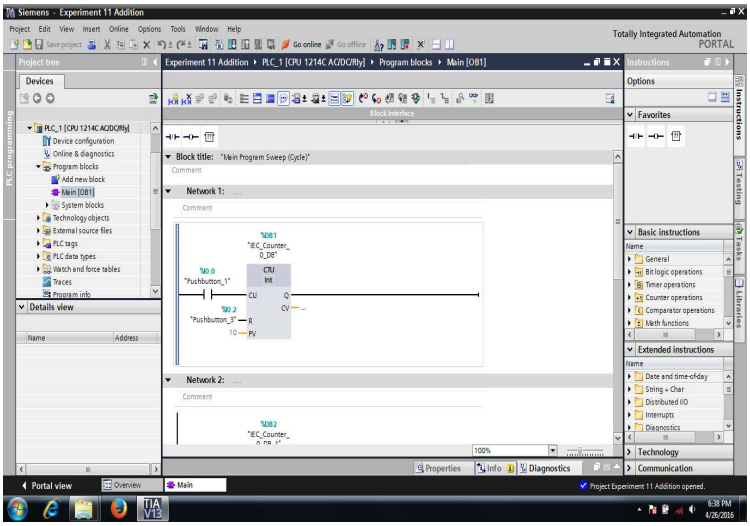
Palletizer

Pick & Place

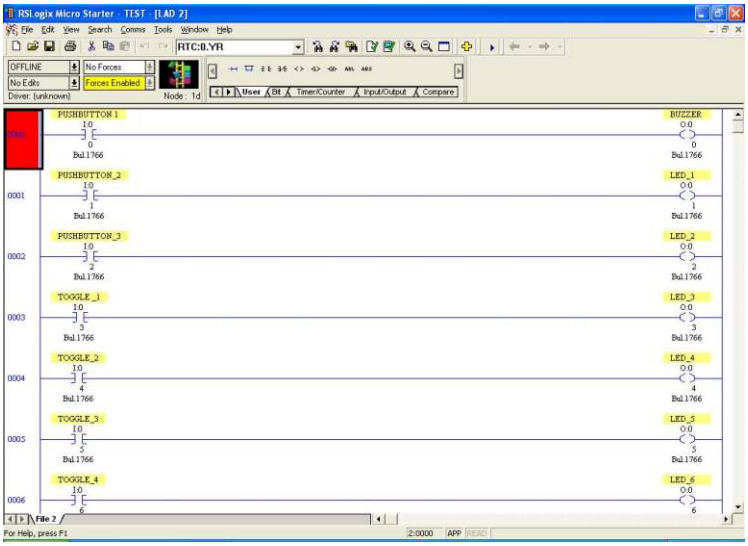
Automatic Warehouse



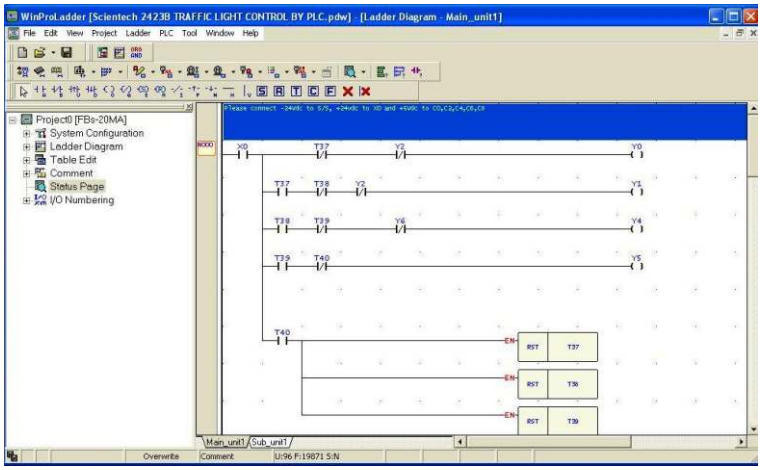
Program windows



Siemens PLC



Allen Bradley PLC



FATEK PLC

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Universal PLC Platform

Scientech 2400

Scientech 2400A Siemens PLC

PLC CPU Type	: CPU-1212C (AC/DC/Relay)
Digital Input	: 8
Digital Output	: 6
Analog Input	: 2
Analog Output	: 1
Program Size	: 50KB
Internal Memory Bits	: 256
Boolean Execution Speed	: 0.37ms/ instruction
Interface	: Ethernet
Expansion module	: Expandable

Scientech 2400B Siemens PLC

PLC CPU Type	: CPU-1214C (AC/DC/Relay)
Digital Input	: 14
Digital Output	: 10
Analog Input	: 2
Analog Output	: 1
Internal Memory Bits	: 256
Program Size	: 75KB
Boolean Execution Speed	: 0.37ms/ instruction
Interface	: Ethernet
Expansion module	: Expandable

Scientech 2400C Siemens PLC

PLC CPU Type	: CPU-1214C (AC/DC/Relay)
Digital Input	: 30
Digital Output	: 26
Analog Input	: 2
Analog Output	: 1
Internal Memory Bits	: 256
Program Size	: 75KB
Boolean Execution Speed	: 0.37ms/ instruction
Interface	: Ethernet
Expansion module	: Expandable

Scientech 2400I Allen Bradley PLC

PLC CPU Type	: MicroLogix 1100
Digital Input	: 10
Digital output	: 6
Analog Input	: 2
Memory Size	: 1K words (approximately 737 instruction words, 437 data-table words)
Fast Execution time	: 500-instruction program in only 1.56 ms.
Interfacing	: Ethernet
Expansion Module	: Expandable

Scientech 2400E Allen Bradley PLC

PLC CPU Type	: MicroLogix 1400
Digital Input	: 20(12 Fast , 8 Normal)
Digital output	: 12
Analog Input	: 4
Analog Output	: 2
Memory Size	: 1K words (approximately 737 instruction words, 437 data-table words)
Fast Execution time	: 500-instruction program in only 1.56 ms.
Interfacing	: Ethernet
Expansion Module	: Expandable

Scientech 2400J Allen Bradley PLC

PLC CPU Type	: 820 Series
Digital Input	: 12 (4 input shared with Analog input)
Digital output	: 7
Analog output	: 1
Boolean Execution speed	
Sec. per instruction	: 0.33 µs/Sequential instruction in average
Program size	: 20Kbytes
Interfacing	: Ethernet
Expansion Module	: Expandable

Scientech 2400F FATEK PLC

PLC CPU Type	: FBs-14 MA
Digital Input	: 8
Digital output	: 6
Program size (Words)	: 2048
Boolean Execution speed	
Sec. per instruction	: 0.33 µs/Sequential instruction in average
Interfacing	: USB
Expansion Module	: Not Expandable

Scientech 2400G FATEK PLC

PLC CPU Type	: FBs-20 MA
Digital Input	: 12
Digital output	: 8
Program size (Words)	: 4096
Boolean Execution speed	
Sec. per instruction	: 0.33 µs/Sequential instruction in average
Interfacing	: USB
Expansion Module	: Expandable

Scientech 2400GN FATEK PLC

PLC CPU Type	: FBs-20 MA
Digital Input	: 12
Digital output	: 8
Analog Input	: 4
Analog Output	: 2
Program size (Words)	: 4096
Boolean Execution speed	
Sec. per instruction	: 0.33 µs/Sequential instruction in average
Interfacing	: USB
Expansion Module	: Expandable

Scientech 2400GNH FATEK PLC

PLC CPU Type	: FBs-20 MA
Digital Input	: 12
Digital output	: 8
Analog Input	: 4
Analog Output	: 2
Program size (Words)	: 4096
Boolean Execution speed	
Sec. per instruction	: 0.33 µs/Sequential instruction in average
Interfacing	: USB
Expansion Module	: Expandable

HMI

Supply	: +24V DC
CPU	: 32-bits 400MHz RISC
Storage	: 128M FLASH + 64M DDRAM
Display size	: 7 inch
Resolution	: 800×480 TFT LCD 65,536 colors
Interface	: RS232/RS485/RS422
Touch Screen	: High precision four-wire resistive

Subject to Change

Designed and Manufactured in India by -

Scientech Technologies Pvt. Ltd.

94, Electronic Complex, Pardesipura, Indore-452010, India.

✆ +91-9904574884 ✉exports sales