

**Feature:**

- Multiple PLC Trainer contains nine different reputed PLCs where no two PLCs are the same.
- Seventeen additional input and output modules are used for interfacing nine different categories of PLCs.
- This setup enables students to program and interface with input and output loads from nine different reputed PLC categories.
- As a result, students gain the capability to control machinery used in industries employing PLCs.

**Experiment List:**

1. Construction of nine different categories of PLCs.
2. Interfacing methods of nine different categories of PLCs.
3. Programming methods for nine different categories of PLCs.
4. Pick & Place operation using PLC & Pneumatic Air Suction method.
5. Pick & Place operation using PLC & Pneumatic Gripper method.
6. Water Pump Control using nine different categories of PLCs.
7. Fire Indication System using nine different categories of PLCs.
8. Traffic Light Control using nine different categories of PLCs.
9. Construction of Pneumatic cylinder.
10. Sequential control of three Pneumatic cylinders using nine different categories of PLCs.
11. Construction of Pneumatic solenoid valve.
12. Control of Pneumatic solenoid valve using PLC.
13. Interfacing of PLC & Pneumatic solenoid valve.

*Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.*



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14. Method of Control Relay using PLC.
15. Methods for three-phase Induction Motor Starter using PLC.
16. Forward-and-reverse operation methods for three-phase Induction Motor.
17. Interfacing PLC with Input Switch.
18. Interfacing PLC with Input Sensor.
19. Operating proximity sensors with PLC.
20. Operating photo sensors with PLC.
21. Use of Variable Frequency Drive (VFD) with PLC.
22. Programming VFDs with PLC.
23. Construction of Three-Phase Induction Motor.
24. Interfacing Three-Phase Induction Motor with VFD & PLC.
25. Construction of Stepper Motor.
26. Interfacing Stepper Motor with PLC.
27. Construction of Seven Segment Display.
28. Interfacing Seven Segment Display with PLC.
29. Interfacing Power Supply with nine different categories of PLCs.

### Technical Specification:

#### Main Structure:

- **Main Voltage:** Single-phase 220V, 50 or 60 Hz
- **Working Table:** 1EA
- **Working Frame:** 3-Step
- **Module Storage Cabinet:** 2EA
- **Electric Accessories Storage Cabinet:** 1EA
- **Air Compressor:** 1EA
  - **Power:** AC 220V ( $\pm 10\%$ ), 50Hz or 60Hz
  - **Motor Power:** 650W
  - **Nominal Volume:** 9L
  - **Normal Output Voltage:** 0.7 MPa
  - **Noise Level:** 66 dB
- **Dimensions (L x W x H):** 1735 x 700 x 1660 mm
- **Connection Facility:** 2mm & 4mm Safety Socket

#### PLC Categories:

##### PLC Category-01 (24258048.1-M01):

- **PLC:** Siemens
- **Programming Language:** Ladder, Functional Flow Chart Diagram
- **Built-in Communication:** Ethernet
- **Power Supply:** 24VDC, 1A
- **Digital Input:** 8
- **Analog Input:** 4

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- **Analog Output:** 2
- **Digital Output:** 4
- **Display Unit:** Yes
- **Programming Software:** LOGO Soft Comfort or equivalent
- **Programming Cable:** PLC to PC Communication Cable
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**PLC Category-02 (24258048.1-M02):**

- **PLC:** Mitsubishi
- **Power Supply:** 24VDC
- **Input Types:** 24VDC
- **Output Types:** Relay
- **Communication Options:** RS-232, RS-485, RS-422, USB
- **CPU Functions:** High-speed counters, 32-bit floating point math
- **Program Memory:** 128 KB Max (64,000 steps)
- **Ambient Conditions:**
  - Temperature: 0–55°C (operation), -20–70°C (storage)
  - Humidity: 5–95% RH (no condensation)
- **Noise Immunity:** 1000 Vpp, 1 μs pulse width at 30–100Hz
- **Digital Input:** 8
- **Digital Output:** 8 (Relay)
- **Programming Software:** Gx-Developer or equivalent
- **Programming Cable:** SC-09 or equivalent
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**PLC Category-03 (24258048.1-M03)**

- **PLC:** Fatek
- **PLC Input:** 8 points Digital
  - Triggering Power: 24VDC
  - (2 points high speed 100KHz, 2 points medium speed 20KHz, 4 points medium speed total 5KHz)
- **PLC Output:** 6 points relay
- **Communication Port:** RS232, USB
- **Built-in Power Supply:** SPW14-AC or D12 or D24
- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 295 x 225 x 45

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**PLC Category-04 (24258048.1-M04)**

- **PLC:** Omron
- **Power Supply:** 220VAC
- **Triggering Voltage:** 24VDC
- **Digital Input:** 18
- **Digital Output:** 12 (Relay)
- **Programming Cable:** PLC to PC communication Cable
- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 295 x 225 x 45

**PLC Category-05 (24258048.1-M05)**

- **PLC:** Delta
- **Power Supply:** 220VAC
- **Triggering Voltage:** 24VDC
- **Digital Input:** 6
- **Digital Output:** 4 (Relay)
- **Programming Cable:** PLC to PC communication Cable
- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 295 x 225 x 45

**PLC Category-06 (24258048.1-M06)**

- **PLC:** Allen Bradley
- **PLC Digital Input:** 12 Nos
- **PLC Digital Output:** 7 Nos
- **PLC Analog Input:** 4 Nos
- **PLC Analog Output:** 1 No
- **Key Features:**
  - 20-point controllers
  - Embedded 0...10V non-isolated 4-channel analog input and 1-channel analog output for speed control of an AC drive
  - Embedded communications via non-isolated serial port (RS-232, RS-485) and Ethernet port
  - Communicates via EtherNet or IP
  - Embedded microSD™ slot for program transfer, data logging, and recipe management
  - Support for up to four 10k thermistor temperature inputs
  - Program download through USB with optional 3.5-in. Remote LCD
  - Support for up to two Micro800 Plug-in Modules
- **Programming Cable:** PLC to PC communication Cable

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- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 295 x 225 x 45

**PLC Category-07 (24258048.1-M07)**

- **PLC:** LS
- **Power Supply:** 220VAC
- **Digital Input:** 18
- **Digital Output:** 12 (Relay)
- **Triggering Voltage:** 24VDC
- **Programming Cable:** PLC to PC communication Cable
- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 295 x 225 x 45

**PLC Category-08 (24258048.1-M08)**

- **PLC:** Schneider Electric
- **Built-in Display:** LCD
- **Key Features:**
  - High-speed Operation
  - Number of Control Scheme Lines
  - Maximum Number of I/O Points:
    - 0...500 with FBD programming
    - 0...240 with ladder programming
  - Cycle Time: 6...90 ms
  - Backup Time: 10 years at 25°C
  - Program Memory Check: On each power-up
- **Supply Voltage Limits:** 19.2...30V
- **Discrete Input Voltage:** 24VDC
- **Discrete Input Current:** 4mA
- **IP Protection:** IP20 (terminal block) conforming to IEC 60529
- **Mechanical Durability:** 10,000,000 cycles (relay output)
- **Output Thermal Current:** 8A for all 4 outputs (relay output)
- **Number of Outputs:** 4 relay outputs
- **Discrete Input Number:** 6 (conforming to EN or IEC 61131-2 type 1)
- **Programming Cable:** PLC to PC communication Cable
- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 295 x 225 x 45

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**PLC Category-09 (24258048.1-M09)**

- **PLC:** Wecon
- **Power Supply:** 220VAC
- **Digital Input:** 8
- **Digital Output:** 6 (Relay)
- **Triggering Voltage:** 24VDC
- **Programming Cable:** PLC to PC communication Cable
- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 295 x 225 x 45

**PLC Pick & Place using Pneumatic Air Suction Module (24258048.1-M10)**

- **Base Plate:** Aluminum Profile
- **Structure:** Aluminum Profile
- **Function Indicator:** Tower Type (Red, Green, Yellow)
- **Carry Function:** Using Air Suction Method
- **Pneumatic Cylinder:** 2 Pcs
- **Optical Fiber Sensor:** 2 Sets
- **Solenoid Valve:** 3 Pcs
- **Cabinet Control Circuit Power Supply:** DC24V
- **Environmental Conditions:**
  - Temperature: -10°C to 40°C
  - Humidity: ≥90%
- **Air Pressure:** 0.4 to 0.6Mpa
- **Input Power:** Single-phase, three-wire AC 220V (±10%), 50Hz or 60Hz
- **Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimension (L x W x H) (mm):** 600 x 460 x 20

**Water Pump Control Module (24258048.1-M12)**

- **Base Plate:** Aluminum Profile
- **Water Chamber:** Upper and Lower
- **Water Flow Control:** Solenoid Valve
- **Water Pump Power:** 5W
- **Operating Voltage:** 24VDC
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 600 x 460 x 20 mm

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**Fire Indication System Module (24258048.1-M13)**

- **Smoke Sensor:** Included
- **Interfacing:** PLC and DC power supply connection facility
- **Integration:** Compatible with Water Level Control Module
- **Operating Voltage:** 24V
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Traffic Light Control Module (24258048.1-M14)**

- **Indicators:** Built-in Green, Yellow, and Red LEDs
- **Interfacing:** PLC and DC power supply connection facility
- **Operating Voltage:** 24V
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Pneumatic Control Module (24258048.1-M15)**

- **Pneumatic Cylinder:** 3 EA
- **Operating Environment:** Temperature: -10°C to 40°C, Humidity: ≥90%
- **Air Pressure:** 0.4 to 0.6 MPa
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Pneumatic Solenoid Valve Module (24258048.1-M16)**

- **Pneumatic Solenoid Valve:** 3 EA
- **Operating Voltage:** 24V
- **PLC Connection Points:** 3 EA
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm
- **Integration:** Compatible with Pneumatic Control Module

**Relay Control Module (24258048.1-M17)**

- **Relay Type:** Double Pole Double Through (4 Sets)
- **Relay Operating Voltage:** 24V
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

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**Motor Starter Module (24258048.1-M18)**

- **Magnetic Contact Switches:** 2 Nos
- **Status Indication:** Star-Delta
- **Relay Operating Voltage:** 220V to 240VAC
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Input Switch Module (24258048.1-M19)**

- **Pushbutton Switches:** 4 Nos
- **Push-On/ Push-Off Switches:** 4 Nos
- **Operating Voltage:** 24VDC
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Sensor Module (24258048.1-M20)**

- **Sensors:** Proximity (2 Nos), Photo (2 Nos), Thermocouples (2 Nos)
- **Operating Voltage:** 24VDC
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Output Indicator Module (24258048.1-M21)**

- **Indicators:** 4 Nos
- **Operating Voltage:** 220V-240VAC
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Variable Frequency Drive Module (24258048.1-M22)**

- **Drive:** 1 No
- **Input:** Three-Phase/Single-Phase
- **Output:** Three-Phase 220VAC (PWM)
- **Capacity:** 400W
- **Input Voltage:** 220V-240VAC
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L x W x H):** 295 x 225 x 45 mm

**Three-Phase Induction Motor Module (24258048.1-M23)**

- **Motor Type:** Three-Phase, Delta Connection

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- **Operating Voltage:** 220V–240VAC
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L × W × H):** 295 × 225 × 45 mm

#### Stepper Motor Control Module (24258048.1-M24)

- **Motors:** Unipolar (1 No), Bipolar (1 No)
- **Operating Voltage:** 5V/12V
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L × W × H):** 295 × 225 × 45 mm

#### Seven Segment Display Module (24258048.1-M25)

- **Displays:** 2 Nos
- **Operating Voltage:** 5V & 12V
- **PLC Connection Facility:** 2mm & 4mm Safety Socket
- **Module Dimensions (L × W × H):** 295 × 225 × 45 mm

#### Power Supply Module (24258048.1-M26)

- **Input Voltage:** 220V–240VAC
- **Output Voltage:**
  - AC: 220V, 50Hz
  - DC: 5V (1A), 12V (1A), 24V (1A)
- **Safety:** Fuse Protection
- **PLC Connection Facility:** 2mm & 4mm Safety Socket

#### Accessories

- **Air Compressor:** 1 No
- **Connecting Jacks (2mm & 4mm):** 1 Set
- **Power Cable:** 1 No
- **PLC to PC Communication Cable:** 9 Sets
- **Simulation Software:** Compatible with PLC
- **Manual & CD:** 1 Set

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