Scientech

Pneumatic and Electro Pneumatic Training Workbench

Scientech 2470ADT



The Scientech 2470ADT Pneumatic and Electro-Pneumatic Training Workbench is an advanced educational platform developed to provide hands-on training in pneumatic control systems, electro-pneumatic circuits, and industrial automation technologies. The system integrates pneumatic actuators, directional control valves, sensors, air preparation units, electrical control elements, and PLC interfaces on a modular workstation, enabling learners to understand both theoretical and practical aspects of automation.

The workbench simulates real industrial environments and allows students, technicians, and engineers to design, assemble, test, and troubleshoot pneumatic and electro-pneumatic control circuits. It serves as an ideal training solution for technical institutes, engineering colleges, vocational centers, and industrial training departments.

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Features

- Integrated Pneumatic and Electro-Pneumatic Training Platform supports both pneumatic and electro-pneumatic circuit development on a single workbench.
- Industrial PLC with 12 digital inputs, 8 digital output with USB communication facility and programming software.
- Heavy-duty modular aluminum profile structure ensures durability, stability, and long service life.
- Industrial-grade pneumatic components equipped with cylinders, directional control valves, flow control valves, FRL unit, and accessories as used in real industrial applications.
- Function and identification of Pneumatic components and their symbols.
- Sequential & linear pneumatic control.
- PLC Interface capability supports integration with PLCS for automation, sequence control, and industrial process simulation.
- Modular component mounting system for components can be easily mounted, repositioned, and removed for various experiments and training exercises.
- 4 mm patch cord electrical connections provides safe, quick, and flexible electrical wiring for conducting electro-pneumatic experiments.
- Push-in Pneumatic fittings: Enables tool-free, secure, and leak-proof pneumatic tube connections for rapid circuit assembly and modification.
- Integrated low-voltage DC power supply for sensors, relays, solenoid valves, and control circuits.
- Equipped with lockable caster wheels for easy movement and positioning within laboratories.
- MCB for ON/OFF control and over load protection.

Scope of Learning

Study and use of:

- Normally Open (NO) and Normally Closed (NC) contact using PLC.
- Types of logic gate: NOT, AND, OR, NAND, NOR, XOR & XNOR gate using PLC.
- Set and reset bit using PLC.
- Memory bit using PLC.
- Timer instruction using PLC.
- Counter instruction using PLC.
- Compare instruction using PLC.
- Arithmetic (addition) instruction using PLC.
- Move instruction using PLC.

Control of:

- Double Acting Cylinder (DAC) using 5/2 solenoid valve using PLC.
- Double Acting Cylinder (DAC) by using 5/2-hand lever valve.
- Single Acting Cylinder using 3/2 roller lever actuator.
- Double Acting Cylinder (DAC) using two flow control valve.
- Single Acting Cylinder using 3/2 solenoid valve using PLC.
- Single Acting Cylinder using palm actuator (3/2 pushbutton valve).
- Double Acting Cylinder (DAC) using shuttle valve using PLC.

Sequencing of:

- (A+A-) control of Double Acting Cylinder by 5/2 solenoid valve using PLC.
- (A+B+A-B-) control of two Double Acting Cylinder (DAC) by using PLC.
- (A+B-A-B+) control of two Double Acting Cylinder (DAC) by using PLC.
- (A-B+A+B-) control of two Double Acting Cylinder (DAC) by using PLC.
- (A-B-A+B+) control of two Double Acting Cylinder (DAC) by using PLC.

Counting of:

- Double Acting Cylinder_2 (DAC2) Piston forward movement using proximity sensor using PLC.
- Double Acting Cylinder (DAC) forward movement using limit switch using PLC.

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Technical Specifications

PLC

Digital Inputs	:	12 nos.
Digital Outputs	:	8 nos.
Program size (words)	:	2048
Boolean execution speed	:	0.33ms/sequential instruction in average
Interfacing	:	USB
Programming software	:	Winproladder
Power Supply	:	110V - 260V AC, 50/60Hz

Pneumatic and Electro Pneumatic Components

Double acting cylinder	:	2 nos.
Single acting cylinder	:	1 no.
5/2 hand lever valve	:	1 no.
Manifold	:	1 no. (4 ports)
Flow control valves	:	2 nos.
5/2 Solenoid valves	:	2 nos.
3/2 Solenoid valve	:	1 no.
Shuttle valve (or valve)	:	1 no.
Roller lever valve	:	1 no.
Proximity sensor	:	1 no.
Limit switch	:	1 no.
Filter regulator and lubricator	:	1 no.



Electrical components

Pushbuttons	:	4 nos.
Toggle switches	:	5 nos.
Inductive proximity sensor	:	1no.
Roller lever limit switch	:	1 no.
Indicator	:	9 nos.
Audio indicator	:	1 no.
24VDC Power Supply	:	1 no.
Current rating	:	6A
Air compressor	:	1 no.
Power	:	0.75 HP
Pressure	:	100 psi (maximum)
Tube cutter	:	1 no.
MCB	:	1 no.
Current rating	:	6A
Caster wheel	:	4 nos. (2 with lock & 2 without lock)

PC

- Computer Desktop PC, core i-5 12 or 13 Gen., Supported processor, Ram 8Gb, SSD- 480/512, Cabinet with SMPS, Win11 Pro , 19.5" monitor with wireless keyboard and mouse.

Subject to Change

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