LAB ENGINEERING

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| **Product Name :** | **Product Code :** |
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| ELECTRO-PNEUMATIC TRAINER KIT | IDUS0002 |


**Description :**

ELECTRO-PNEUMATIC TRAINER KIT

**Technical Specification :**

ELECTRO-PNEUMATIC TRAINER KIT.

**FEATURES**

Advanced customized electro-pneumatic trainer kit is capable of being used to demonstrate the design, construction and application of electro-pneumatic components and circuits. The Kit is designed to satisfy following objectives:

- Function & identification of Electro-pneumatic components & their symbols.
- Direct and indirect manual controls, stroke dependant controls, time dependant and pressure dependant
  Controls with time delay, pressure sequence valves.
- Design & function of an electro-pneumatic System.
- Functional diagrams.
- Logic AND/OR function to start signals.
- Application and fault findings of Electro Pneumatic controls.
- Pneumatic power section – Electric control section.
- To empower students to design their own circuits.
- The kit is modular and upgradeable.
- Training Manuals provided for Operation with Ease.

The components are capable of being mounted on an appropriate profile plate with grooves for secure and flexible positioning so that the components can be clamped firmly, quickly and safely through quick fix adaptors. Industrial components are used in the kit so that the students get hands on practical training in using industrial components.

**TECHNICAL SPECIFICATIONS**

**1]** Profile Plates & Stand: The anodized Aluminium profile plate is the basis for training. All components fit securely & safely onto the profile plate with safe fixing arrangement.
Grid Dimensions: 50mm, Size: 1000 ×700mm.
**2]** Shuttle Valve (OR): 1 No. : The Shuttle Valve is switched through to the output by applying compressed air to one of the inputs (OR) function. Design type is OR gate (shuttle valve). Pressure range: (1-10 Bar)
**3]** Dual Pressure Valve (AND): 1 No. : The dual-pressure Valve is switched through to the output by applying compressed air to both the inputs (AND) Function. Design type is AND Gate (Dual Pressure Valve).Pressure Range: (1-10 Bar)
**4]** One way flow Control Valve Assembly: 1 No. : - The One – way flow control valve is a combination of flow control valve & a non-return valve. The cross section of the restrictor can be set by means of a Knurled screw. Design type is combined flow control Valve. Pressure range – (0.5-10 Bar)
**5]** Pressure Sequence Valve assembly: 1 No.:- The pressure of the control signal can be set by means of the pressure setting screw (variable). Design type is Poppet Valve with return spring. Operating Pressure range – (1.8 – 8 bar). Control Pressure range - (1 – 8 bar).
**6]** Single Acting Cylinder: 1 No. : Design type is Piston Cylinder. Operating Pressure 10 bar. Stroke length – Max. 100mm.
**7]** Double Acting Cylinder: 1 No. : Design – Piston Cylinder. Operating Pressure – 10 bar
Stroke Length – Maximum 100 mm
**8]** Manifold Assembly: 1 No. : - Manifold with 6 (2 ×3) Hex-Ball Valve. A common manifold for plastic tubing allows supply of compressed air to the control via six individual ports (for plastic tubing PUN 4×0.75)
**9]** Filter regulator with Gauge: Filter control valve with pressure gauge, gate valve, quick push-pull connectors & quick couplings mounted on a swivel support. The filter with water separator removes dirt, pipe sinter, rust & condensed water. The pressure control valve regulates the supply. Air pressure to the set operating pressure & compensates pressure fluctuations. The filter bowl has a condensate drain valve. The shutoff valve ventilates & vents entire control. Input pressure –Maximum (16 bar), Output pressure – Max 12 bar, grade of filtration– 40 mm approx., Connector – G 1/8 , / PU 4
**10]** Relay, Three fold: 2 No. : The device has three relays with terminals and two buses for power supply. Contact set – 4 change-over switches, Contact load – maximum 5 A.,
**11]** Signal Input, Electrical: 1 No. : The device contains an illuminated push-button switch (control switch) & two illuminated push buttons (momentary contact switches) with terminals and two buses for power supply. Contact set – 2 makes, 2 breaks, and Contact load – maximum 1A.
**12]** Indicator & Distributor Unit, electrical –: 1 No. : The device contains an acoustic indicator and four lamps with terminals and three buses for power supply. Through-contact socket pairs per lamp allow the element to also be used as a Distributor.
**13]** Proximity switch with attachment: -2 No. : The Proximity switch consists of a sensor, the mounting kit and the cable. This proximity switch gives a signal when it detects a metal. The status is indicated by an LED. Switching Voltage – 24 VDC, Switching current – max. 200 mA, Switching Power – 6 W approx, switching accuracy - ±0.1mm
**14]** 3/2 Solenoid Valve, Single with LED,– 1No. : The status is indicated by an LED on the housing. The valve is equipped with a manual override. Pneumatic Technical data: Design type is spool valve, pilot controlled with return spring, Pressure range: 250-800 kPa
(2.5-8 bar), Electrical Technical data: Power consumption – 1.5 W
**15]** 5/2 way single Solenoid Valve with LED: 1No. : The status is indicated by an LED on the housing. The valve is equipped with a manual override. Pneumatic Technical data: Design type is spool valve, pilot controlled with return spring, Pressure range: 250-800 KPa (2.5-8 bar), Electrical Technical data: Power consumption – 1.5 W
**16]** 5/2 Solenoid Valve, Double with LED: 1 No. : The statuses are indicated by LEDs on the housings. The valve

is equipped with two manual overrides. Pneumatic Technical Data: Design-spool valve with pilot control, Pressure range – 150-800KPa (1.5-8 bar)
Electrical Technical Data: Power Consumption – 1.5 W
**17]** Pneumatic – Electric convertor:-1 No.: The pneumatic – electric convertor can fulfil 3 functions: Pressure Switch, Vacuum Switch and Differential Pressure Switch. Pneumatic Technical Data: Pressure Ranges: Pressure Switch connector P1 - 0.25 – 3.5bar, Vacuum Switch- -0.2- -0.8 bar Differential Pressure Switch: Connectors P1….P2 - (-0.95 – 3.5 bar), Switching Current: - 400 mA.
**18]** Limit Switch, Left Actuated – 1 No. : The electrical limit switch comprises a mechanically operated micro switch. When the roller lever is pressed, for example, by control cam of a cylinder, the micro-switch is actuated. The circuit is closed or opened via the contacts. The micro-switch can be wired as a normally open or normally closed or changeover contact. Contact load: maximum 5A, switching frequency – maximum 200Hz, Reproducible accuracy – 0.2mm, Switch travel – 2.7 mm, Actuator force – 5N
**19]** Limit Switch, Right actuated – 1 No. : The electrical limit switch comprises a mechanically operated micro switch. When the roller lever is pressed, for example, by control cam of a cylinder, the micro-switch is actuated. The circuit is closed or opened via the contacts. The micro-switch can be wired as a normally open or normally closed or changeover contact. Contact load: maximum 5A, switching frequency – maximum 200Hz, Reproducible accuracy – 0.2mm, Switch travel – 2.7 mm, Actuator force – 5N
**20]** Equipment Tray – 1 No. : MS powder coated tray with slots for placing components to be supplied with Electro-pneumatic supplementary kit.
**21]** Power Supply Unit – 1 No.: Input Voltage - 230/115 V Ac (47-63 Hz.), Output Voltage – 24 V DC, short circuit proof, output current – Max. 4.5 A, Connection Cable – 3m
**22]** Plug in adapter: For mounting components with plug-in foot on the aluminium profile plate.
**23]** Quick Push-Pull connectors: Sufficient shall be supplied for branching of the tubing for making of the circuitry.
**24]** Plastic Tubing: PUN 4×0.75, Exterior Diameter-6mm, Interior Diameter- 4mm, Transparent – 10mtrs, Blue-10mtrs.
**25]** Set of moulded Cables:
1.5 Meter (2 core) _____6 No.
1 Meter (3 core) _____ 3 No.
300 mm Red: - 06 No.
300 mm Black: - 06 No.

**Range Of Experiments:**
Study of Advanced Electro – Pneumatic Trainer
Study of various Pneumatic Components
Study of Pneumatic & Electro-pneumatic Circuits

**Services Required:**
230 V AC, 50 Hz Power Supply.
Dry, Compressed, Clean Air supply at 4-5 Kg/Cm².

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