

SAP E & C IOT BASED INDUSTRIAL PROCESS DEMONSTRATION PLANT
i.e. MECHATRONICS TRAINER KIT
(PRODUCT CODE: SAP-91)



FIG. IOT BASED INDUSTRIAL PROCESS DEMONSTRATION PLANT

IOT BASED INDUSTRIAL PROCESS DEMONSTRATION PLANT (SAP-91) outlines the basic Principle of Pneumatic Control System & its applications in industrial manufacturing process plant using PLCs, HMIs, VFD, Proximity position sensors & electro-mechanical actuators (solenoid valves).

A] ELECTRICAL CONTROL PANEL-

No.	Item Name	Technical Specifications
1	PLC-	2 Nos.: 1) Allen Bradley Micrologix 1400/Eqvt. Digital Inputs- 20, Digital Outputs- 12, Analogue input- 4, Analogue output- 2, Input /Output LED indication on front panel. PC interface facility, HMI-PLC interfacing cable. 2) Siemens S7-1200/Schneider TM200CE24T/Eqvt. Digital Input- 14, Digital Output- 10 Input /Output LED indication on front panel. PC interface facility, HMI-PLC interfacing cable.
2	Power Supply-	24 VDC, Power Source- 5A
3	VFD	1 No. Supply: 230V AC, 1500 RPM, ½ HP Make: Delta/Siemens Sinamics V20/Allen Bradley PowerFlex/Eqvt.,

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4	Proximity Sensors-	Inductive type : 06 nos., 3wire PNP type, 24 VDC, Sensing Distance: 5-8mm Optical Type: 4 nos., 3 Wire, Sensing Distance: 30mm, 24 VDC
5	Indicating Lamps-	24 V DC, On front panel for display of digital input/output status Amber : 20 Nos., Red : 16 Nos.
6	Momentary Push Buttons-	24 V DC operated, 08 nos.
7	Human Machine Interface (HMI)-	2 Nos. Make: Mitsubishi/ Schneider/Delta /Eqvt. Size: 7"
8	Energy meter-	Make: Selec/Eqvt. 230V, 50 Hz power supply, Output: Pulse type
9	Industrial Computer-	For Data Capturing - OPC with IPC With Network Switch: 6/8 Ports
10	Electronic Control Panel-	MS Powder coated panel with switches, indicator, test Points, controller on front fascia, UK 2.5 Terminal Connectors mounted on DIN rail channel, Use of 1sq mm multi-strand wire with proper insulated Lugs, Feruling & Through 1"x1" PVC Cable Tray. Dimensions: 3.5 ft x 2 ft x 5 ft
11	Base platform / Mounting Table-	MS powder coated frame. Dimension: 5 ft x 3.5 ft x 4ft

B] PNEUMATIC CONTROL PANEL-

No.	Item Name	Technical Specifications/Objective
1	Ejector unit-	a. Double Acting Cylinder: Mounting: Foot, 6 nos., 1/4" connection b. 5/2 way Solenoid Valves: 6 nos., 24 V DC operated, 1/4" Connection
2	One way Solenoid Valves-	1 No. 24 V DC operated, 1/4" Connection
3	Manifold	10 Way, 1 No.
4	FRL Unit	1 No., 1/4", 0-10 Kg/cm ²

C] PROCESS MODULES-

I) STACKING MODULE-

No.	Item Name	Technical Specifications/Objective
1	Raw material stacker-	01 No., Dimension: 80mm x 80mm x 460mm
2	Ejector unit-	Double Acting Cylinder (1 no.) - Used for Pushing the object from stacker to conveyor module.
3	Raw material-	Cubical Boxes, 9 Nos. Dimension: 75mm x 75mm x 75mm

II) CONVEYOR MODULE-

No.	Item Name	Technical Specifications/Objective
1	Conveyor Belt-	2 Nos. Dimension: 100mm x 1610mm Thickness : 2 mm
2	Gear Motor-	2 Nos. 1) AC Induction type, Single phase 230 V Supply, 30 RPM 2) AC Induction type, Three Phase 440V Supply, 30 RPM

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III) SORTING MECHANISM/MODULE -

No.	Item Name	Technical Specifications/Objective
1	Sorting Mechanism-	Used to sort different Objects, such as Metallic Objects & non-metallic objects
2	Ejector unit-	Double Acting Cylinder (1 no.) - Used to sort the Object & push it off the Roller Conveyor.

IV) LIFTING MECHANISM/MODULE -

No.	Item Name	Technical Specifications/Objective
1	Platform-	Dimension: 100mm x 100mm
2	Ejector unit-	Double Acting Cylinder (1 no.) - Used for Lifting Up the Objects, thus forming a Lifting Mechanism. The Piston rod of the Double Acting Cylinder lifts the object.

V) TEMPERATURE/HEATING MODULE:

No.	Item Name	Technical Specifications/Objective
1	Temperature Sensor with Transmitter-	Input: RTD / Thermocouple, Output: 4-20mA (For Transmitter only) Sensor Length: 150 mm, DC Supply 24V, 50mA Range: 0-100°C
2	Dryer-	1 No., For heating the raw material 1000 W, 230V AC Supply, Range: 0 to 60°C

VI) DRILLING PROCESS MODULE:

No.	Item Name	Technical Specifications
1	Pneumatic Rotary Actuator-	Used for drilling purpose. Connection: ¼" RPM: 10000
2	Ejector unit-	Double Acting Cylinder (1 no.) - Used for UP & DOWN movement of pneumatic rotary actuator.

VII) WEIGHING PROCESS MODULE:

No.	Item Name	Technical Specifications
1	Weighing platform-	Load Cell Range: 0 to 3 Kg Output: 4 to 20 mA Power supply: 230 V 50 Hz Used for weight measurement of objects.

VIII) BARCODE MODULE:

No.	Item Name	Technical Specifications/Objective
1	Barcode scanner with stand-	1 No. LED indications, beeper indications Toggle triggered mode/auto scan mode Connectivity: RS232/USB

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IX) ROBOTIC ARM/PICK & PLACE MODULE:

No.	Item Name	Technical Specifications/Objective
1	Pick & Place Module / Robotic arm-	Displacement in 2 axes : X-Y axis Capable to pick and place an object from one position to another Variable Jaw area to Pick objects of different shapes and weights

X) PRESSURE MODULE:

No.	Item Name	Technical Specifications/Objective
1	Pressure Transmitter with pressure gauge-	Input: 0-10 Kg/cm ² , Output: 4-20 mA, Type: 2-wire Piezo-resistive type, Supply: 24 V DC, 50 mA
2	Air pump for operating ejectors-	Air Compressor -Tank capacity: 25 Liters, Discharge: 2 CFM Motor: 1 H.P. 230 V AC Operated, Working pressure: 5-6 kg/cm ²

Features: -

- ❖ Compact Ergonomic Design.
- ❖ All Pneumatic components identical to those used in industry.
- ❖ User Friendly, Self Explanatory Systems.
- ❖ Data can be locally monitored, stored and uploaded on cloud using OPC server and can be remotely accessed, monitored for data analysis.
- ❖ Leak proof Safety Measures, sturdy piping & Robust Construction.
- ❖ Training Manual, mimic Charts for Operation Ease.
- ❖ System Frame with Caster Wheel Arrangement for ease in movement.
- ❖ M.S. fabricated powder coated with necessary fittings & Pneumatic Connections.
- ❖ Inbuilt Safety Measures to avoid improper usage.
- ❖ Integration of Electronic, Instrumentation and Pneumatic in single unit.
- ❖ Detailed Operation & Instruction Manual

Services Required:

- ❖ Electric supply 230 V AC, 50 Hz.

Note:

All descriptive matter and illustrations are intended to give only a general idea of the equipment Detailed specifications may be altered at the company's discretion without any notice.

Manufactured/Marketed By

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