

**SAP E&C WATER PRESSURE CONTROL SYSTEM  
TRAINER (PCST 03A) COMPUTERIZED (OPTIONAL)**



The Water Pressure Control system trainer gives an idea Regarding the Pressure Control loop (Water Pressure) and Aspects related to it.

**KEY WORDS:**

- ❖ Feedback control.
- ❖ Feedback Pressure control.
- ❖ PID control.
- ❖ P, P+I, P+I+D CONTROLLER ACTION.

**Technical Specifications: -**

- ❖ Sump tank : - Material: Stainless Steel, 2 mm thick /P.P.5mm thick capacity: 30 liters.  
Dimension: 1ft (L)×1ft (W)×1 ft (H).
- ❖ Piping : - ½” Class B GI, with ½” SS ball valve: 8 nos.
- ❖ Centrifugal Pump : - ½” H.P., 230 V AC supply, Surface mounting.
- ❖ Pressure vessel : - Shape: Cylindrical, Material; SS 304, 5 mm thick.  
With pressure gauge Diameter: 150 mm, Length; 300 mm,  
Capacity: 15 Kg/cm<sup>2</sup>, with ½” BSP connection  
for pressure gauge, inlet & drain facility. Pressure gauge- 0-4 Kg/cm<sup>2</sup>
- ❖ Pressure Transmitter : - Input: 0-2.5 Kg/cm<sup>2</sup> / 0-4 Kg/cm<sup>2</sup>, Output: 4-20 mA  
Type: 2-wire Piezoresistive type, Supply: 24 V DC, 50 mA  
Mounting: Top ½” BSP connection.
- ❖ Pneumatic control valve : - Size: ½”, Type: Two way Globe type (Air to Close)  
Cv: 5 US GPM, with diaphragm actuator, equal % characteristics  
PCD 60 mm; ID 16 mm; OD 90 mm.
- ❖ E/P Converter : - Input: 4-20 mA, Output: 3-15 psi, Connection: ¼” NPT / BSP 1.4 Kg/cm<sup>2</sup>.
- ❖ Air Pressure Regulator : - 0-10 Kg/cm<sup>2</sup> with pressure gauge, Connection: ¼” NPT / BSP.
- ❖ Electronic PID Controller : - With Serial PC Interface (ASCII Protocol) RS 232,  
Cut Out Size: 92mm× 92mm×144mm,  
Input: 4-20 mA, Output: 4-20 mA,  
Display: Dual for PV & SP, Bargraph display for  
Output & deviation, Hi-Low alarm annunciation.
- ❖ SCADA Application Software (OPTIONAL) : - SCADA S/W, PID control setting (P, PI, PD and PID mode).  
Auto/Manual Tuning of PID, Data Storage, Off Line analysis, Online Data  
Acquisition, Simulation and Printing of data in Graphical and  
Tabular form. Interactive Graphical User Interface (GUI) included.

- ❖ Electrical Control Panel: - MS Powder coated panel with switches, indicator, Test Points, controller on front facia, UK 2.5 Terminal Connectors mounted on DIN rail Channel. Use of 1sq mm multistrand wire with Proper insulated Lugs, Ferruling & neat wire Dressing & clamping Wires & power cables are seated through 1''×1''PVC cable tray, Dimension: 1ft (L) ×1ft (W) ×1ft (H).
- ❖ Computer (Optional) :- PC with color monitor: 15'', PC Pentium Dual Core, with serial communication ports, 80 GB HDD, 512 MB RAM, Floppy Drive.
- ❖ Air Compressor (Optional) :- Tank capacity: 30 Liters Discharge: 2 CFM. Motor: ½ H.P. 230 V AC Operated, Working pressure: 3-4 kg/cm<sup>2</sup>

#### Features:-

- ❖ Compact Ergonomic Design.
- ❖ User Friendly, Self Explanatory Systems.
- ❖ Leak proof Safety Measures, sturdy piping.
- ❖ Enhanced Electrical Safety Considerations.
- ❖ Training Manuals mimic Charts for Operation Ease.
- ❖ System Frame with Caster Wheel Arrangement for ease in movement.
- ❖ M.S. powder coated cubical plant with standard Instrument Mountings.
- ❖ Inbuilt Safety Measures to avoid improper usage.
- ❖ Computer Interface& SCADA software connectivity for analysis of pressure.
- ❖ Control System Trainer (Optional).

#### Range Of Experiments:

- ❖ Study of single loop Proportional (P), Integral (I) and Derivative (D) control.
- ❖ Study of operation and calibration of transmitters, I/P converters and control valve.
- ❖ Study of programming & operation of PID controller.
- ❖ Study of stability of single loop pressure control system.
- ❖ Configure microcontroller based controllers to give manual output, change of controller modes (Manual/Auto), checking ON-OFF, Proportional, Integral, Derivative, PI and PID control actions, Change local set point, configure and run a set point ramp, configure measured values to either Percentage or engineering units.
- ❖ Demonstrate proportional control of pressure, with offset, overshoot, instability and optimum Value of proportional band or gain.
- ❖ Demonstrate the effect of integral control and the optimization of the integral (reset) time for Pressure control.
- ❖ Study of SCADA Application Software/ Computerized Control of Water Pressure Control System.


**System Dimensions:** 4.5 Ft. X 1.5 Ft. X 4.5 Ft. (H)

#### Services Required:

- ❖ Water supply and drainage arrangement
- ❖ Single-phase electrical supply: 230VAC 50Hz.
- ❖ Clean, dry compressed Air supply at 2.1 Kg/cm<sup>2</sup>.

#### 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

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