

**SAP E&C LEVEL CONTROL SYSTEM TRAINER
(PCST 02) COMPUTERIZED (OPTIONAL)**



The Level Control System Trainer is the system, which outlines the basics of closed loop Level Control Process and other aspects related to it.

KEY WORDS:

- ❖ Feedback control
- ❖ Feedback Level control.
- ❖ PID control.
- ❖ P, P+I, P+I+D Controller Action.

Technical Specification: -

- ❖ Sump tank : - Material: Stainless Steel, 2 mm thick /P.P.5mm thick. Capacity: 30 liters, Dimension: 1ft (L) ×1ft (W) ×1 ft (H).
- ❖ Level Tank : - Dimension: 150(Ø) mm×500(H) mm.
- ❖ Piping : - ½” Class B GI, with ½” SS ball valves: 10 No.
- ❖ Level Transmitter : - Input: 0-400 /0-500 mm, Output: 4-20 mA
Supply: 24 V DC, 100 mA. Type: 2-wire
Capacitance type. Type, Mounting: Top 2” screwed
Connection / flange connection.
- ❖ Centrifugal Pump : - ¼ H.P., 230 V AC supply, Surface mounting.
- ❖ Level Switch (OPTIONAL) : - Float operated, Float Material: SS304, Switching Current: 2A
Switching voltage: 240 VAC\200 VDC
Switch Action: Reversible, Weight: 315 Gms
- ❖ Pneumatic control valve : - Size: ½”, Type: Two way Globe type (Air to Close)
Cv: 5 US GPM, with diaphragm actuator, equal % characteristics
Flange connection: PCD: 60 mm, ID16 mm, OD: 90 mm.
- ❖ Rotameter : - Range: 0-1000 LPH, Glass tube type/ Acrylic body, Connection: ½”,
Bob material: SS 304, Mounting: Inlet Bottom Outlet Top.
- ❖ E/P Converter : - Input: 4-20 mA, Output: 3-15 psi, Connection: ¼” NPT / BSP,
Supply: 1.4 Kg/cm².
- ❖ Air Pressure Regulator : - 0-10 Kg/cm² 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, Bar graph display
for Output & Deviation. Hi-Low Alarm annunciation.

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- ❖ SCADA Application
Software: - SCADA S/W, PID control setting (P, PI, PD and PID mode).
(OPTIONAL) 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/cm²

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 Level 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 converter and control valve.
- ❖ Study of stability of single loop level control system.
- ❖ Study of cascade control to be used in conjunction with PCST-01 FLOW Control trainer system (optional).
- ❖ Implement distributed control TDS- 2001 when used in conjunction with computer control system (Optional)
- ❖ Configure microcontroller based controllers to give manual output, changing 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 the proportional control of level, 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 level control, P+D & P+I Control action for Level.
- ❖ Study of SCADA Application Software/ Computerized Control of Level Control System.

System Dimensions: 4.5 Ft. (L) X 1.5 Ft. (W) X 4.5 Ft. (H)

Services required:

- ❖ Water supply and drainage arrangement, Electric supply 230 V AC, 50 Hz.
- ❖ Clean, Dry Compressed Air Supply at 2.1 Kg/cm².

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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