

SAP E&C CASCADE CONTROL SYSTEM TRAINER (PCST 05) COMPUTERIZED (OPTIONAL)



The Cascade Control System Trainer is the system, which outlines the basics of Cascade Control considering Flow, level as Process parameters.

KEY WORDS:

- ❖ Feedback control.
- ❖ Cascade control (Level + Flow)
- ❖ Feedback Level control.
- ❖ Feedback Flow 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) ×1ft (H).
- ❖ Level Tank: - Dimension: 150(Ø) mm×400(H) mm.
- ❖ Piping: - ½’’ Class B GI, with ½’’ SS ball valves: 10 No.
- ❖ Centrifugal Pump: - ¼ H.P., 230 V AC supply, Surface mounting.
- ❖ Flowmeter: - ½’’, turbine type / wfm type, Range: 0-600 LPH / 0-1000 LPH.
Output: 4-20 mA, Type: 3-wire type, Supply: 24 V DC: 100 mA
Mounting: Horizontal, Connection: ½’’
- ❖ 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.
- ❖ Level Switch: - 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.
Flange connection: PCD: 60 mm, ID16 mm, OD: 90 mm.
- ❖ Rotameter: - 2 no. 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.
- ❖ Air Filter Regulator: - 0-10 Kg/cm² with pressure gauge, Connection: ¼’’ NPT / BSP.
- ❖ Electronic PID Controller:- 2 no. Single input PID (1 NO.) & Dual input (1 No.),
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.

- ❖ 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) includes.
- ❖ 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.
Dimension: 1ft (L) ×1ft (W) ×1ft (H)
- ❖ Computer: - PC with colour monitor: 15'', PC Pentium Dual Core,
(Optional) With serial communication ports, 80 GB HDD, 512 MB RAM, Floppy Drive.
- ❖ Air Compressor: - Tank capacity: 30 Liters, Discharge: 2 CFM
(Optional) 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 & Robust Construction.
- ❖ 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 Cascade Control Loop (Optional).

Range Of Experiments:

- ❖ Study of multivariable loop, Cascade Control.
- ❖ Study of single loop proportional (P), integral (I), and derivative (D) control.
- ❖ Study of operation and calibration of transmitters, I/P converter and pneumatic control valve.
- ❖ Study of programming and operation of PID controller.
- ❖ Study of stability of dual loop cascade control system (Flow - Level Control).
- ❖ Study of rotameter, capacitance type level sensor & control valve.
- ❖ Study of SCADA Application Software/ Computerized Control of Cascade Control System.
- ❖ Auxiliary Experiments.

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

Services Required:

- ❖ Electric supply 230VAC, 50Hz.
- ❖ Clean, dry Compressed air supply at 2.1 Kg/cm².

Note:

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

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