



The Automated Flow and Level Control Trainer is the COMBINED system, which outlines the basics of Feedback Flow and Feedback Level Control Loops.

KEY WORDS:

- ON-OFF & PID control.
- OPEN/CLOSE loop Response.
- MANUAL/AUTO tuning of controller
- Feedback Level Control.
- Feedback Flow Control.
- P, P+I, P+I+D Controller Action.
- TRANSIENT response analysis study
- USB/RS 232 / Ethernet/ Modbus Communication
- Ability to hook up with DCS (Distributed Control System Trainer)

TECHNICAL SPECIFICATION

Sump tank	Material: Stainless Steel, 1.5 mm thick/PP 5mm thick , Capacity: 30 litres, With top cover, Dimensions: 1ft (L) ×1ft (W) ×1ft (H).
Level Tank	Material: PP 5mm thick, Dimension: 150(L) mm×150(W) mm×600(H) mm
Piping	½" Class B GI, with ½" SS ball valves: 10 Nos.
Centrifugal Pump	½ HP, 1f 230 V AC supply, Surface mounting.
Flow Meter	½", Turbine type (WFM type), Range: 0-500 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, Mounting: Top 2" screwed connection.
Pneumatic Control Valve	Size: ½", Two way Globe type (Air to Close), Type: Equal Percentage, Cv: 5 US GPM with diaphragm actuator. Flange connection: PCD: 60 mm, ID16 mm, OD: 90 mm.
Rotameter	1 No., Range: 100-1000 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
AFR/FRL Unit	0-10 Kg/cm ² with pressure gauge, Connection: ¼" NPT/BSP
Electronic PID Controller	1 no. Single input PID (1 No.) with Serial PC Interface (ASCII Protocol) USB / Ethernet / RS 485 / RS 232, Cut Out Size: 92mm ' 92mmX144mm, Input: 4-20 mA, Output: 4-20 mA, Display: Dual for PV & SP, Bar graph display for Output & deviation, Hi-Low Alarm annunciation.
52202 SCADA Application Software (Optional)	SCADA Application 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) 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) X1ft (W) X1ft (H)
52201 Computer (Optional)	PC with color monitor: 18.5", Intel Core i3, 500 GB HDD, 4GB RAM, Keyboard & Mouse, DVD Writer, With supporting OS and Communication port.
52203 Air Compressor (Optional)	Tank capacity: 25 Liters, Discharge: 2 CFM, Motor: 2 H.P. 1f 230 V AC Operated, Working pressure: 5-6 kg/cm ²

Note: Specifications are subject to change.

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Range of experiments

- Study of Feedback Control.
- Study of OPEN LOOP/CLOSE LOOP TUNNING & AUTO TUNNING of controller.
- Study of STEP response & Transient response of controller (process curve).
- 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 Feedback Flow Control loop and Feedback Level Control loop.
- Study of Rotameter, capacitance type level sensor & control valve.
- Study of SCADA Application Software/ Computerized Control of Feedback Flow and Level Control System.
- Auxiliary Experiments.

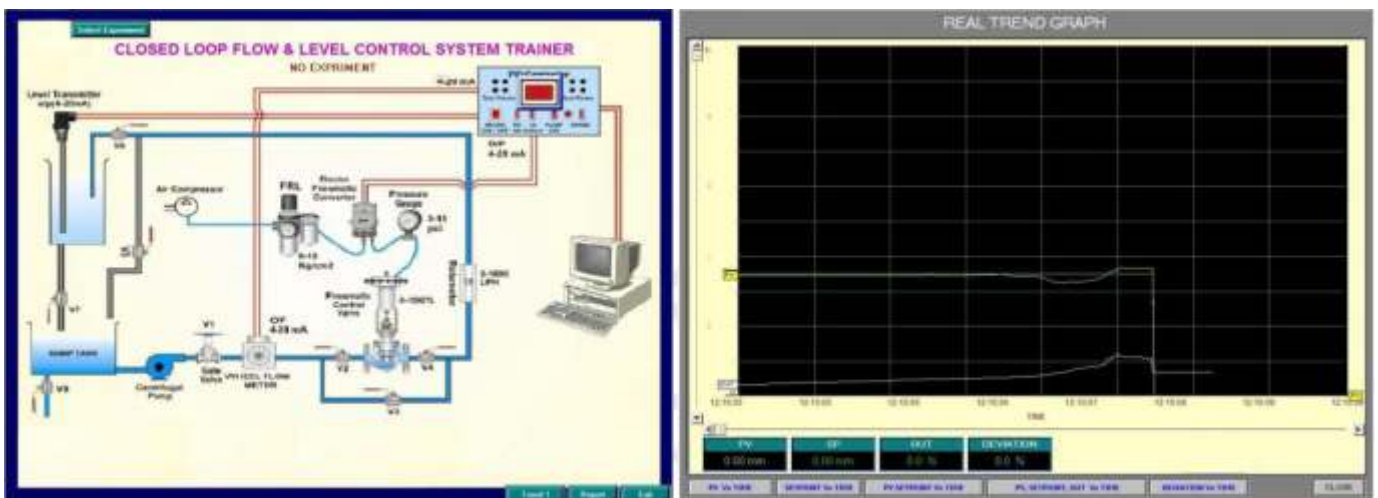
Features:-

- 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
- Computer Interface & SCADA software connectivity for analysis of Control Loop (Optional).
- Caster wheel mounted movable frame
- System Dimension: 4.5 Ft. (L) × 2 Ft. (W) × 5 Ft. (H)
- Weight: Approx. 80 Kg

Services Required:

- Electric supply 1φ 230VAC, 50Hz
- Water Supply and Drainage Arrangement
- Clean, dry Compressed air supply at 2.1 Kg/cm²
- Laptop/Desktop computer (for SCADA)

52202 SCADA APPLICATION SOFTWARE (Optional):



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