PROCESS CONTROL MULTIVARIABLE SYSTEM

(Four process controls in just one trainer: FLOW, LEVEL, TEMPERATURE & PRESSURE)

Mod. FLTP/EV

The system mod. FLTP/EV has been developed to cover the following educational subjects included in an intense theoretical-practical training program, as follows:

- Study of the sensors and relative signal conditioners circuits for the process variables: Flow, Level, Temperature and Pressure.
- Study of the closed ring process control techniques. Study of the different process control ways: PID control with PLC, with Industrial PID controller, with PC data acquisition card and with datalogger.

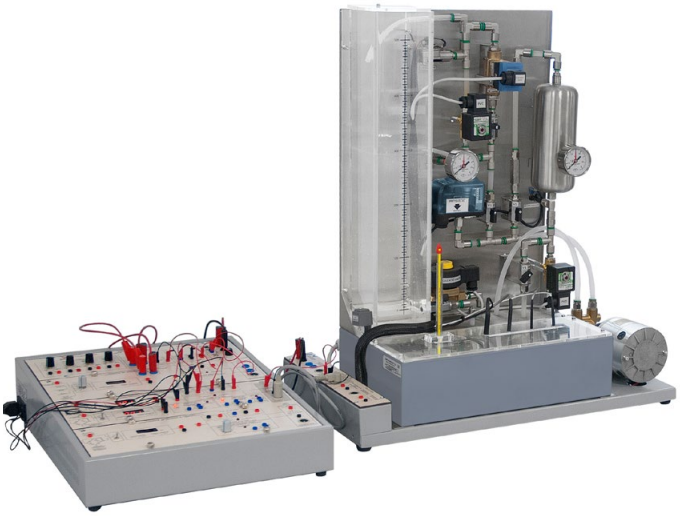
The system mod. FLTP/EV has been carried out according to industrial criteria and with real industrial components. It is composed of the following elements:

- **Process unit mod. FLTP-U/EV** with the following sensors:
  - Temperature: (Pt100, thermocouple-type J, PTC and NTC)
  - Level: (piezometric and ON/OFF sensor)
  - Flow: (turbine-type and ON/OFF magnetic sensor)
  - Pressure: (piezometric and ON/OFF sensor)
- **Control unit including:**
  - Signal amplifier modules
  - Signal coupling circuits for the control of: temperature mod. FLTP-B/EV, level and flow mod. FLTP-C/EV and pressure mod. FLTP-D/EV.

TRAINING PROGRAM:

The system mod. FLTP/EV allows the theoretical analysis and the experiments on the following subjects:

- Detection of the characteristic curve of the transducers and the signal conditioning circuits for the temperature, flow, level and pressure sensors.
- Detection of the time constants of the processes.
- Analysis of the closed ring automatic control for flow, level, temperature and pressure: ON/OFF control mode and Proportional (P), Proportional Integral (PI), Proportional Derivative (PD) and Proportional Integral Derivative (PID) control mode.
- Analysis of the variables curves through the PID algorithm in the PLC, in the industrial PID controller (with autotuning function) and acquisition/control card for PC with dedicated software (supplied).



TECHNICAL SPECIFICATIONS:

Process unit mod. FLTP-U/EV

- Metal holder with Plexiglas vertical panel
- 3 tanks: lower one in ABS, about 12 lt. capacity; upper one (Plexiglas column), 5 lt; side one in steel, 1 lt.
- Recirculation pump, 6 lt/min 12 V - 7A
- Manual valves
- 48 V 200 W water heater
- Safety thermostat
- 1 mercury glass thermometer (-20 °C a + 110 °C)
- 2 Proportional valves, bronze body 0-10 V
- 2 manometers 0-4 bar
- External unit connection with 4 mm diameter terminals and DIN connectors
- ON/OFF solenoid valve
- Flow sensors: 1 turbine-type, 1 magnetic-type for ON/OFF control
- Level sensors: 1 ON/OFF-type, 1 piezometric-type
- Temperature sensors: 1 Pt100-type, 1 thermocouple J-type, 1 PTC-type, 1 NTC-type.
- Pressure sensor: 1 piezometric-type, 1 ON/OFF-type

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Control unit including:

- Signal amplifiers modules
- Signal conditioners circuits for the automated control of: temperature mod. FLTP-B/EV, level and flow mod. FLTP-C/EV and pressure mod. FLTP-D/EV.
- On board power supply mod. FLTP-A/EV: Output 1: 48 V~ / 5 A; fuse protection, Output 2: 24 Vdc/1 A, Output 3: -12 Vdc/1 A and +12 V/2 A, Output 4: 12 V / 7 A fuse protection; LED for voltage indication, ON/OFF Switch for the pump control, connection terminals to the modules mod. FLTP-B/EV, mod. FLTP-C/EV and mod. FLTP-D/EV to the process unit mod. FLTP-U/EV, 4 Potentiometers for the external set-points, ranges 0-10 Vdc/10 mA.

The following optional monitoring units can be also used (not included):

PLC Training panel

Suggested: mod. PLC-1215C/EV or mod. PLC-V8/EV

Industrial PID

- Single loop PID digital controller mod. SLC/EV
- Four loops PID digital controller mod. PID-S1/EV

Datalogger:

- EVLAB DATALOGGER mod. EV2010/EV
  with 2 Interfaces EVSI-FLTP/EV
  and one interface EVSO-FLTP/EV

DIMENSIONS AND WEIGHT

- External unit mod. FLTP-U/EV: 680 x 330 x 880 mm, 40 Kg
- Power supply mod. FLTP-A/EV:415 x 460 x 110 mm, 7 kg

POWER SUPPLY

Power supply unit mod. FLTP-A/EV: 115/230Vac ±10% - 50/60Hz

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL HANDBOOK