SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

Phone: +91 7015865225 **Email:** info@scienticoindia.com **Web:** scienticoindia.com **Address:** #71, Industrial Area, Ambala Cantt, Haryana, India

Process Control Trainer (4 in 1) | NexuMation-50

Category: Automation and Control Technology · **Order Code:** NEXUMATION-50 · **Country of Origin:** India

Product Overview

The Process Control Trainer (4 in 1) NexuMation-50 is an educational platform combining a pressurized vessel, sensors and actuators for level, pressure, temperature and flow control. This Process Control Trainer integrates ON/OFF, proportional, integral and derivative control circuits on a dedicated control module. Ten structured experiments cover sensor characterization and closed loop control across all four process variables. Optional add-ons include a Digital PID Controller with Data Acquisition Unit and a Programmable Logic Controller Unit with data logging.

View this product online: https://scienticoindia.com/product/process-control-trainer-4-in-1-nexumation-50/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Process Control Trainer (4 in 1) NexuMation-50 — Technical Specifications

Specification	Value
Fixed Supply DC	+15V, -15V
Vessel	5 Liter approx.
Water Tank	20 liter approx.
Heater Element	200W
Water Circulation Pump	10 Ltr/min
Piping	Plastic
Thermal Sensor	PT100, Bi-metallic, Direct Reading
Pressure Sensor	Manometer Direct Reading, Strain Gauge
Level Sensor	LVDT, Float Switch
Flow Sensor	Direct Reading, IR-Opflow, 8000 pulses/Ltr
Valves	Manual, Motor Driven, Safety set at 20 Bar

Technical Data

Sensor Interfaces

Interface	Detail
Level Sensor Interface	Precision Rectifier and DC Amplifier with Offset and Gain Control
Flow Sensor Interface	F/V Converter and DC Amplifier with Offset and Gain Control
Temperature Sensor Interface	T/V Converter and DC Amplifier with Offset and Gain Control
Pressure Sensor Interface	P/V Converter and Differential Amplifier with Offset and Gain Control

Control Circuits

Circuit	Detail
ON/OFF Control	Comparator with Hysteresis Control
Analog Source	0 to +10V, 0 to ±10V
PID Controller	Proportional, Integral and Differential Control with Feedback

Driver Circuits

Driver	Detail
Pump Driver	DC to PWM Driver with DC Level Offset Control
Motor Valve Driver	±10V ON/OFF Control
Heater Driver	DC to PWM Driver with DC Level Offset Control
Solenoid Valve Driver	ON/OFF Control with Driver

Optional: Programmable Logic Controller Unit

Specification	Value
Digital Inputs	14 x 24V DC (Source/Sink)
Digital Outputs	10 x 24V DC (Source)
Analog Inputs	2 x Voltage Type
Analog Outputs	2 x Voltage Type
Program Memory	125KB
Programming Language	Ladder, STL and FBD
Data Logging	With DAQS

Key Features

Key Features

- Process Control Trainer: 4 in 1 design covering level, pressure, temperature and flow
- Sensors: installed on-board
- Control Circuits: installed
- Drivers: installed
- Protection Circuits: installed
- PID Control: proportional, integral and derivative with feedback
- Safety Valve: set at 20 Bar

Experiments

- Study of the Level Sensor
- Study of the Flow Sensor
- Study of the Pressure Sensor

- Study of the Temperature Sensor
- Study of the Characteristics of the Pump and of the Motorized Valve
- Study of the Characteristics of the Static Process and of the Time Constants
- ON-OFF, P, PI, PD and PID Closed Loop Control of the Level
- P, PI, PD and PID Closed Loop Control of the Flow
- ON-OFF, P, PI, PD and PID Closed Loop Control of the Temperature
- ON-OFF Control of the Level with the Pressure Sensor

Construction and Design

The Process Control Trainer (4 in 1) NexuMation-50 is built around an educational board holding a 5 liter approx. pressurized vessel and a 20 liter approx. water tank. A 200W heater element and a 10 Ltr/min water circulation pump drive the process loop through plastic piping. Level is measured through an LVDT and float switch, pressure through a manometer with direct reading and a strain gauge, temperature through a PT100 bi-metallic direct reading sensor, and flow through a direct reading IR-Opflow sensor rated at 8000 pulses/Ltr. Manual, motor driven and safety valves control fluid flow, with the safety valve set at 20 Bar. This Process Control Trainer places all sensor interfaces, control circuits and driver circuits on a dedicated control module for direct observation and testing.

Software

Optional Digital PID Controller with Data Acquisition Unit / Interface Software :

- Flow Control: manual ON/OFF or software PID control algorithm
- Level Control: manual ON/OFF or software PID control algorithm
- Temperature Control: manual ON/OFF or software PID control algorithm
- Pressure Control: manual or software PID control algorithm
- PID parameters are controllable, with graph plotting available

Scope of Delivery

- Process Control Trainer (4 in 1) NexuMation-50 board with vessel, sensors and actuators
- Control module with sensor interfaces, control circuits and driver circuits
- Power Cords
- 2mm Patch Cords
- Experimental Manual

Optional Accessories

- Digital PID Controller with Data Acquisition Unit / Interface Software
- Programmable Logic Controller Unit (with DAQS for data logging)

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1: What parameters can be studied on the Process Control Trainer (4 in 1) NexuMation-50?
A: It covers level, pressure, temperature and flow, each with dedicated sensors, interface circuits and control experiments.

Q2: What type of control does this trainer support?
A: It supports ON/OFF control as well as P, PI, PD and full PID closed loop control across all four process variables.

Q3: What is the vessel and tank capacity?
A: The pressurized vessel holds approximately 5 liters, and the water tank holds approximately 20 liters.

Q4: What is the safety valve rating?
A: The safety valve is set at 20 Bar.

Q5: Can the trainer be upgraded with software or a PLC?
A: Yes, it supports an optional Digital PID Controller with Data Acquisition Unit / Interface Software IT-5200SW, and an optional Programmable Logic Controller Unit IT-5200P with DAQS for data logging.

SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India
#71, Industrial Area, Ambala Cantt, Haryana, India

+91 7015865225 · info@scienticoindia.com
scienticoindia.com
Product reference: NEXUMATION-50