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PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Temperature Control Training System | NexuMation 67

Category: Automation and Control Technology · **Order Code:** NEXUMATION 67 · **Country of Origin:** India

Product Overview

The Temperature Control Training System NexuMation 67 is an experimental unit for learning control engineering fundamentals using a heated metal bar. This temperature control training system uses a Peltier element rated 382W at 300K and 443W at 50°C, with three K-Type Thermocouples along the bar axis. Temperature control range is approx. 0...100°C. A software-activated fan generates disturbances, and LabVIEW-style software configures P, PI, PID and switching control via USB under Windows 10.

View this product online: https://scienticoindia.com/product/temperature-control-training-system-nexumation-67/



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

Technical Specifications

Temperature Control Training System NexuMation 67: Technical Specifications

Parameter	Value
Unit Type	Experimental unit for control engineering experiments
Housing	Accommodates all electronics
Process	Temperature control of a heated metal bar
Heating/Cooling	Peltier element
Temperature Sensing	3 K-Type Thermocouples along bar axis
Disturbance Generation	Software-activated fan
Front Panel	Process schematic
Data Acquisition	DAQ with simulation software via USB under Windows 10
Controller Configurations	P, PI, PID and switching controller

Technical Data

Parameter	Value
Peltier element power consumption	382W at 300K, 443W at 50°C
Peltier element operation	DC voltage
Heated bar	D x L: 15x140mm, aluminum

Parameter	Value
Temperature sensor	K-Type Thermocouple
Temperature indicator	Digital
Fan power consumption	2W
Fan max flow rate	40m³/h
Temperature control range	approx. 0...100°C

Key Features

Key Features

- **Application:** temperature control training system for control engineering fundamentals
- **Housing:** accommodates all electronics
- **Heated Bar:** aluminum, D x L 15x140mm
- **Heating/Cooling:** Peltier element, DC voltage, 382W at 300K / 443W at 50°C
- **Temperature Sensing:** 3 K-Type Thermocouples, digital indicator
- **Disturbance Generation:** software-activated fan, 2W, 40m³/h
- **Control Range:** approx. 0...100°C
- **Controller:** software configurable as P, PI, PID and switching
- **Software:** hardware/software integration (HSI)
- **Connection:** USB, Windows 10

Experiments

- Fundamentals of control engineering based on the example of a temperature control system
- System dead time can be obtained from the response
- Open loop control response
- Effects of different controller parameters and methods on the response of the closed loop system
- Recording of step responses (Reference variable / Disturbance variable)

Construction and Design

The Temperature Control Training System NexuMation 67 is mounted on a housing that accommodates all the electronics. A metal bar sits inside a transparent casing. One end of the bar is heated or cooled by a Peltier element.

Three temperature transducers are placed along the axis of the bar. They establish thermal lags at different operating conditions. A dial temperature indicator gives a direct reading. Temperature is measured using K-Type Thermocouples.

A fan dissipates part of the heating power. It can be activated by the software to generate disturbance variables. The temperature control training system has a process schematic on the front panel. The experimental unit connects to the PC via a USB port.

Software

- Powerful state-of-the-art software, integral part of the training system
- Hardware/software integration (HSI)
- DAQ with simulation software via USB under Windows 10
- Configurable as P, PI, PID and switching controller
- Process schematic with controller type selection: manual, continuous controller, two or three-point controller, programmer
- Disturbance variable input

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 does the temperature control training system teach?
It teaches the basic fundamentals of control engineering, using a heated metal bar as the example.

Q2. How is the bar heated and cooled?
By a Peltier element, operated by DC voltage. Power consumption is 382W at 300K and 443W at 50°C.

Q3. How is temperature measured?
By three K-Type Thermocouples along the axis of the bar, with a digital temperature indicator for direct reading.

Q4. How are disturbances introduced?
A fan that dissipates part of the heating power is activated by the software. It consumes 2W with a max flow rate of 40m³/h.

Q5. Which controller types can be configured?
The software controller is configurable as P, PI, PID and switching controller. Manual, continuous, two or three-point controller, and programmer options are also selectable.

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