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Product Name :	**Product Code :**
Essentials of Process Control	NLAB-TECHNICALAB33003

Technical Specification :

Level Control Process Flow Control Process Temperature Control Process Pressure Control Process Industrial PID Controller Programmable Logic Controller Sensor Conditioning and Calibration Trainer Key Features
Open Loop and Closed loop processes
On/off control (Fixed Dead Band)
P, PI and PID control
Underdamping and overdamping
Time proportioning control
Onset of instability
Manual loop tuning > Effect of filtering on sensor outputs
Commercial PID controllers
Autotuning
Ladder Logic controllers
Effect of Sample Time and Cycle Time
Sensor Calibration > Sensor electrical characteristics

Description
The Essentials of Process Control (EPC) range of products takes students through the fundamentals and principles of process control and progresses to give them a thorough grounding in the control of physical processes. Four independent process units demonstrate level, flow, temperature and pressure as the controlled variable.

The concepts of closed loop control, including on/off control, proportional control, proportional/integral and proportional/integral/derivative (PID) control can be explored and demonstrated.
Some units also cover both time proportioning and analogue control of the same parameter.
Each process is supplied complete with software that allows it to be controlled using a Windows PC via a USB connection.
The effect of making changes to the system or to the controller configuration can be quickly investigated by applying repeatable disturbances or step changes to the process. Comparison of the responses obtained with different control settings clearly demonstrates the need for correct matching of the controller to the system characteristics.

To demonstrate industrial control systems, two further controlling devices are available, a full function commercial PID controller with autotune, and a programmable logic controller (PLC).
The plc has the control algorithms implemented in ladder logic and so are fully accessible to the user.
Another fundamental aspect of process control is an understanding of sensors and how they are calibrated.

This is demonstrated by a sensor calibration apparatus designed specifically to demonstrate this subject.

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