

**PCT  
SERIES**

**Level Control - PCT50**

PCT50 is a highly visible and easy to understand water level control process. It comprises two clear acrylic tanks; a process tank mounted above a sump tank. Water is pumped up to the process tank and drains back to the sump tank via two valves, one manually variable and the other switched by software. Each valve can also be fitted with different sized external orifices to change their characteristics.

This flexible arrangement allows a wide range of control scenarios to be set up, including two fundamentally different processes, i.e.

- ▶ Level control by proportionally varying pump speed (Inflow control)
- ▶ Level control by time-proportioned opening of a solenoid valve (Outflow control)

When using inflow control, repeatable disturbances can be implemented using the solenoid valve, and varied by using different orifice sizes. When using outflow control the pump speed can be stepped to provide a full range of repeatable disturbances. These techniques allow direct comparison of different controller settings.



**Demonstration / instructional capabilities**

- ▶ Inflow control by varying pump speed
- ▶ Outflow control by time proportional cycling of a solenoid drain valve
- ▶ Direct control or Indirect control using an external controller:
  - PID Controller (PCT54)
  - PLC Controller (PCT55)

**Related products**

- PCT40 Multifunction Process Control Teaching System
- PCT23-MKII Process Plant Trainer
- PCT54 Industrial PID Controller
- PCT55 Programmable Logic Controller (PLC)

**Ordering specifications**

**PCT50 Level Control Process**

A level control process trainer, comprising:

- ▶ 4.25 litre Process tank, with overflow, mounted above 8 litre sump tank
- ▶ Level sensor range 0-150mm H<sub>2</sub>O
- ▶ Two discharge ports, one with remote controlled solenoid valve and one with manually controlled valve.
- ▶ Four interchangeable orifices for use with the discharge valves
- ▶ Variable speed submersible centrifugal pump
- ▶ Capable of both analogue PID control using the pump and time proportioning PID control using the solenoid valve
- ▶ USB interface to PC, plus connection terminals for interfacing to external controllers
- ▶ Supplied with educational software for PID control as well as data logging.

**Requirements**

**Scale**



**Mains electrical supply:**

110 to 240 V, 50 or 60 Hz.

(Note, the units are supplied with: IEC leads to suit European and UK 230V, 50Hz outlets and USA 115V, 60 Hz outlets.)

PC computer with 2 spare USB ports (not supplied by Armfield) or external controller (PCT54 or PCT55)

Tap Water

**Overall dimensions**

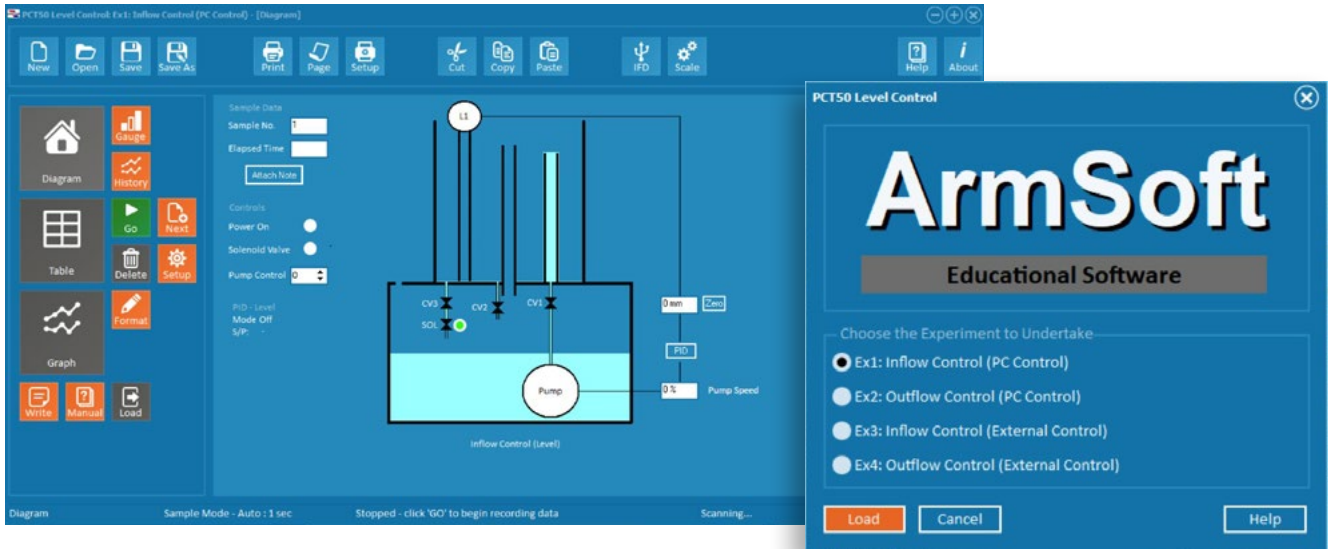
Length	0.425m (total)
Width	0.350m
Height	0.575m
<b>Packed and crated shipping specifications</b>	
Volume	0.18m <sup>3</sup>
Gross weight	25kg

**Ordering code**

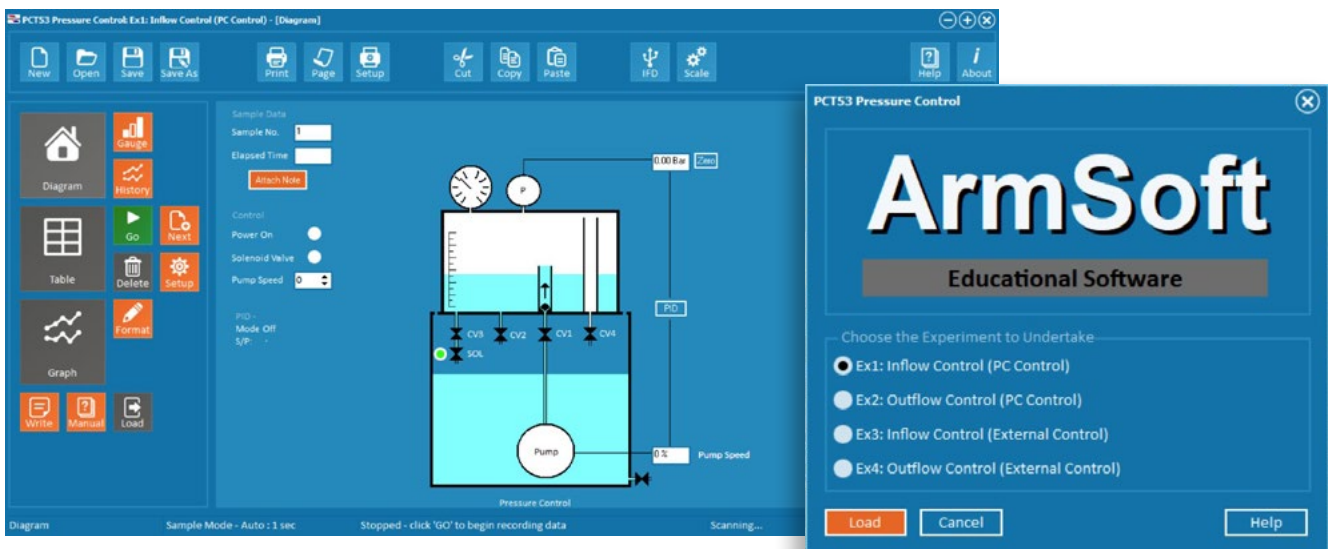
**PCT50**

## SOFTWARE AND INTERFACING FOR THE ESSENTIALS OF PROCESS CONTROL UNITS

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. 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.



Armfield proprietary software including diagrammatic real-time display. Pressing the load button allows the operator to select alternative experimental options.

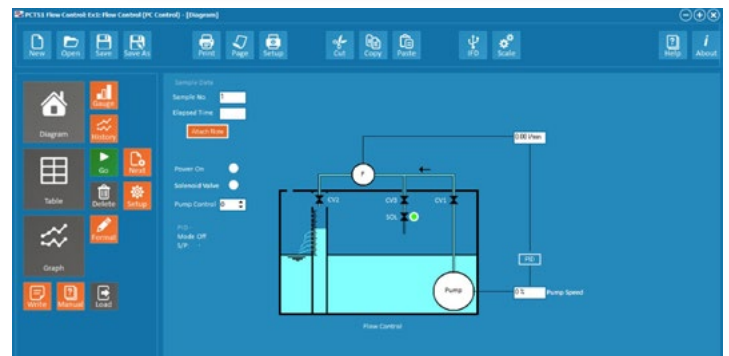


### Software

Primarily computer controlled the ArmSOFT software demonstrates a real time diagrammatic display with readings of the relevant sensor outputs and controls the system inputs. The manual on/off time proportional and PID loops can be configured.

The ArmSOFT software enables the operator to control the pump speed and temperature 0 to 100%. Feedback from the sensors is then displayed in real time for the end user with simultaneous data-logging.

The data trend is also displayed graphically in real time and can be exported to another platform such as Excel for further analysis.



### Knowledge base

- > 28 years' expertise in research & development technology
- > 50 years' providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company



Products CE certified

[armfield.co.uk](http://armfield.co.uk)

### Aftercare

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Support: [armfieldassist.com](http://armfieldassist.com)