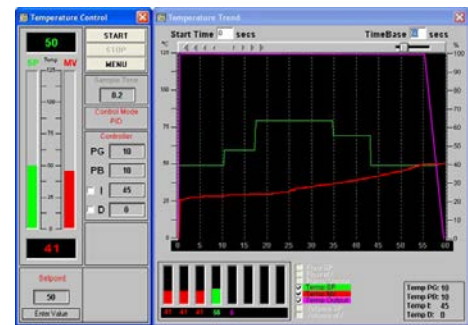


**Process Control Technology Temperature Module PCT-M4**

**Key Features:**

- Control and measurement of temperature
- PID control PC SCADA type software with control and data monitoring
- Complete self-contained unit
- Connection to PC through USB
- Temperature used for the process
- Three PRT sensors in different positions
- Thermoelectric technology 0 to 100°C
- Manually controlled fan for disturbance
- User manual



The PCT-M4 Temperature control trainer system enables the study of the principles in temperature control and monitoring in a system. The system is self-contained and only requires connection to a PC through a USB. The control module is contained on the unit and has a mimic of the systems and LED indication. The PCT-M4 can be controlled through the graphical based software supplied with the unit providing PID control.

The system comprises of a rod that is heated using a thermoelectric element mounted in an enclosed tube, three PRT sensors are fitted along the rod to measure the temperature and a fan is fitted to the end of the tube to provide a disturbance. The tube is made from PTFE and guards are fitted to the fan and the heat sink to provide a safe working environment.

**Curriculum Coverage**

- Introduction
- Software installation
- Software manual temperature control
- Software PID temperature control
- About thermoelectric heating and cooling
- A typical thermoelectric system
- Thermoelectric systems used for heating
- System design
- Design calculation
- Thermoelectric benefits
- Platinum sensor information
- Control methods for TE modules
- Control methods
- Modern control theory
- Topics in control theory
- Main control strategies
- Closed loop control
- Basic control principles
- 1st. order systems
- PID controllers

**Labworks**

- Proportional Control
- Proportional and Integral Control

## Process Module

### Thermoelectric unit

Maximum heater power	25W
Operating temperature	-50°C +150°
Current maximum	3.9 Amps
Voltage maximum	15.5 Volts
Cooling capacity maximum	34 Watts
Delta T maximum	71 °C
Power source	12 to 15V d.c.

### PRTs

Fundamental interval	(0°C to 100°C) - 38.5Ω (nominal)
Thermal response	0.1s
Stability	± 0.05%

Temperature control range	0 to 100°C
Thermic fuse	110°C
Disturbance fan	12V d.c. manually switched

Power Supply	100-240V AC, 50/60Hz
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## Control Console

Front of console	Graphical representation of process module
Connections	1 x Power connector 1 x USB connection
Number of LED displays	3 x Power on, heater on, fan on
Number of switches	1 x Power Switch; 1 x On/Off Switch for Disturbance Fan
Power supply voltage	100-250V AC @ 50/60Hz.

## Software

Windows based graphical software with SCADA type interface with control and data monitoring.

## Weights and Dimensions

Un-Packed		Packed	
Approximate Dimensions (mm)	500W x 300D x 320H	Approximate Dimensions (mm)	580W x 420D x 420H
Approximate Weights	5Kg	Approximate Weights	8Kg

## Required:

A PC with Minimum; Pentium processor, 1GB RAM, 20GB HDD, CDROM Drive, USB 2 interface and Windows XP or above.

## Ordering Information

<b>Model Number:</b>	<b>PCT-M4</b>
<i>Consists of:</i>	1 x Temperature control process module with controller 1 x 12v d.c. power supply 1 x USB connector cable 1 x User manual 1 x CD with Windows based graphical type Software

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