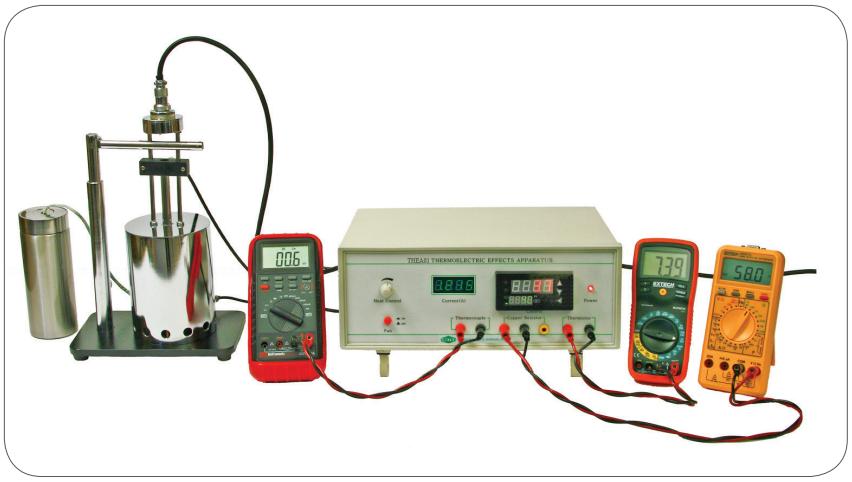
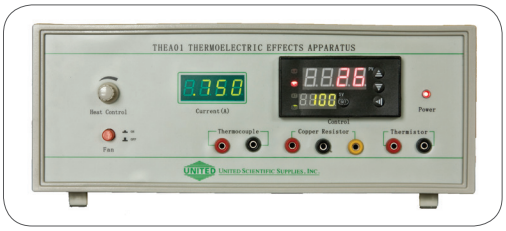
UNITED SCIENTIFIC SUPPLIES, INC.

Thermoelectric Effects Apparatus



The sample oven contains a cooling fan, a massive metal block with an electric heater, three samples, and a control system sensor.

The sample heating assembly can be raised out of the oven on the telescoping support rod.



The control unit provides the heating current, connectors to the three sample devices, and the digital temperature controller.

- **Investigate the thermal characteristics of three electrical thermometry devices**
- **Explore the features and behavior of a closed loop digital temperature control system**

The Thermoelectric Effects Apparatus consists of an oven containing a cooling fan, a massive metal block and electric heater supported on two thin struts, the three samples, and the control system sensor. A control unit provides the heating current and houses the digital temperature controller. The oven and the control unit are connected by three multi-pole cables.

The sample devices are a thermocouple, a three-pole metal resistor, and a thermistor. An insulated flask is provided to hold ice water for the cold junction of the thermocouple. The signals from the three sample devices can be read by any suitable measuring device provided by the user connected to the outputs of the control unit (for example, digital multimeters.)

The digital control system can be operated in P, PI, PD, or PID mode to show their characteristics when controlling the oven temperature with or without fan cooling. A wide range of parameters and alarms can be set to explore their effects.

Item No.	Description
THEA01	Thermoelectric Effects Apparatus

Specifications

Samples:

Thermocouple: Type K (chromel/alumel, approx. 41μV/°C)
Resistor: Three-pole, approx. 50Ω and 100Ω at 0°C, (PT100+PT50).
Thermistor: 12kΩ NTC element. Approx. curve: LnR (Ω) = 3655/T (K) + c

Oven Dimensions:

Brass heating block: 40mm diameter, 67mm high
Oven assembly: 37cm high, 14cm wide, 22cm deep
Weight: 5.1 kg

Control Unit:

Heater supply: Regulated voltage source: 0—36Vdc 10-turn potentiometer Digital current display, 0.000—1.999A
Cooling fan: 12Vdc 0.14A, On/off switch control
Digital controller:
Configurable for P, PI, PD, or PID mode
Process value (PV) range: 0—400°C (default—settable)
Set value (SV) range: same as PV range
PV temperature display: 4-digit, resolution 1°C or 0.1°C
SV temperature display: 4-digit, resolution matches PV
24 settable parameters
2 parameters determined by apparatus configuration
Power input: 110VAC/60Hz, 65W
Dimensions: 13cm x 35cm x 31cm
Weight: 0 5.2 kg

3055 N. Oak Grove Ave. • Waukegan, IL 60087 • Phone 847-336-7556 • Fax 847-336-7571
www.unitedsci.com • Email info@unitedsci.com