



TE3300/05

TEMPERATURE PROCESS TRAINING SYSTEM

A self-contained mobile module for temperature process control experiments to illustrate the principles of single-loop control and the calibration and tuning of controllers, transmitters, converters and valves.



- Demonstrates automatic control of temperature using proportional, proportional plus integral, and proportional, integral plus derivative (PID) control
- Uses industry-standard parts to make it ideal for industrial, vocational and academic training
- Demonstrates operation, calibration and tuning of temperature transmitters and thermocouples
- Compact, mobile and fully self-contained
- Includes delay coil to mimic realistic time lag due to a process
- Connects to the TE3300/06 Computer Control System for distributed control
- Safe, practical and realistic

TEMPERATURE PROCESS TRAINING SYSTEM

DESCRIPTION

The Temperature Process Training System is a compact and mobile unit for a wide range of experiments in temperature control. It gives students a greater understanding of the stability of simple control systems.

The self-contained unit can perform many experiments, but it can also connect to the optional Computer Control System (TE3300/06) for distributed control.

The main parts of the Temperature Process Training system are:

- Industrial controller with autotune feature
- Two-channel chart recorder
- Heat-exchanger and fan
- Temperature transmitter
- Thermocouples
- Delay coil
- In-line heater
- Three-speed pump
- Reservoir

To carry out experiments, students fill the reservoir with clean water and prime the system. They then set the controller to regulate the power to the in-line heater and control the temperature of the water at any of three places. The heat-exchanger removes the heat from the water, to give quicker experiments. The thermocouples (selected by a three-way switch) give feedback to the controller. For a realistic experience, the equipment has industrial-standard instrumentation and parts.

The apparatus includes one gate valve that works as a flow bypass. A chart recorder shows and logs the changes of the process variable (temperature) and the controller output.

NOTE: The chart recorder is paperless, so you need a suitable computer and colour printer if you need to print out hard copies of the chart recorder traces.

A socket on the side of the apparatus links to the Computer Control System (TE3300/06, available separately).

STANDARD FEATURES

- Supplied with comprehensive user guides
- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer

LEARNING OUTCOMES

- Proportional, integral and derivative control
- Setting up and demonstrating automatic control
- The principles of loop control and the calibration and tuning of temperature transmitters and thermocouples
- Operation of a temperature control system
- Distributed control (when used with the TE3300/06 Computer Control System)

RECOMMENDED ANCILLARIES

- Stopwatch (SW1)
- Thermocouple calibrator*
- One-litre container with accurate scale and accurate weighing machine (to measure water flow rate)*
- Computer Control System (TE3300/06)

* not supplied by TecQuipment

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory

STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

SOUND LEVELS

Less than 70 dB (A)

ESSENTIAL SERVICES

ELECTRICAL SUPPLY:

Single-phase 230 V at 3 A or 110 V at 7 A, 50/60 Hz (determined at order)

SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

DIMENSIONS AND WEIGHTS:

Nett: 700 mm x 800 mm x 1750 and 120 kg

Packed: Approximately 1 m³ and 150 kg