

PID-TZ-C1

PID Controlled Oven (with computer interface)

Introduction

Small ovens are frequently used in class room experiments for studying the different parameters of various devices/materials at various temperatures. Conventional arrangement with oven fed from an auto transformer and thermometer type temperature measurement is unsatisfactory due to the long time it takes the oven to heat or cool, large time constant of mercury thermometers and difficulty in setting and maintaining a particular temperature.

Description

The unit is a high quality PID controller wherein the temperatures can be set and controlled easily. The P, I and D parameters are factory set for immediate use however the user may adjust these for specific applications as well as auto-tune the oven whenever required. The steps for these are given in the user manual. The controller can be used for both small oven, up to 200°C or a larger oven up to 600°C. With present setup small oven is provided by default. The controller uses thermocouple as temperature sensor. The setup comes with computer output which can be connected to SES-CAMM unit for further interface to a computer.

Specifications Of The Oven Controller

The controller is designed around Autonics Temperature Controller Model TK4S. Although this is a very versatile piece of equipment, below is a summary of the specifications that are relevant to the present application.



Specification

Temperature Range	: Ambient to 600°C (of controller only)
Power Supply	: 100-240VAC; 50/60Hz
Display Method	: 7 Segment LED display [Process value (PV):Red, Set value (SV):Green]
Input Sensor	: Thermocouple (Chromel - Alumel)
Control Method	: PID, PIDF, PIDS
Display Accuracy	: $\pm 0.3\%$
Setting Type	: Setting by front push buttons
Proportional Band (P)	: 0 to 100.0%
Integral Time (I)	: 0 to 3600 Sec
Derivative Time (D)	: 0 to 3600 Sec
Control Time (T)	: 1 to 120 Sec
Sampling Time	: 0.5 Sec
Setting (P, I & D)	: Manual / Auto-tuned
Interface	: Computer Interface through SES-CAMM unit

