# **Over View of Temperature Controllers**

## Temperature Control Configuration Example

The following example describes the basic configuration for temperature control.



#### Temperature Controller

A Temperature Controller receives electrical signals input from the Temperature Sensor, compares the electrical signal input to the set point, and outputs adjustment signals to the Controller.

### Controller

A Controller is used to heat or cool furnaces and tanks using devices such as a solenoid that cuts off electric current to a heater or a fuel valve that shuts off the fuel supply.

The Temperature Sensor consists of an element protected by a pipe. Locate the element, which converts temperatures into electrical signals, in places where temperature control is required.

# Temperature Control

The set point is input to operate the Temperature Controller. The time required for stable temperature control varies with the controlled object. Attempting to shorten the response time will usually result in overshooting or hunting the temperature. The response time must not be shortened to reduce overshooting or hunting the temperature. There are applications that require prompt, stable control in the waveform shown in (1) despite overshooting. There are other applications that require the suppression of overshooting in the waveform shown in (3) despite the long time required to stabilize the temperature. In other words, the type of temperature control varies with the application and purpose. The waveform shown in (2) is usually considered to be a proper one for standard applications.



### Characteristics of the Controlled Object

Before selecting a Temperature Controller or Temperature Sensor, it is necessary to understand the thermal characteristics of the controlled object for proper temperature control.

