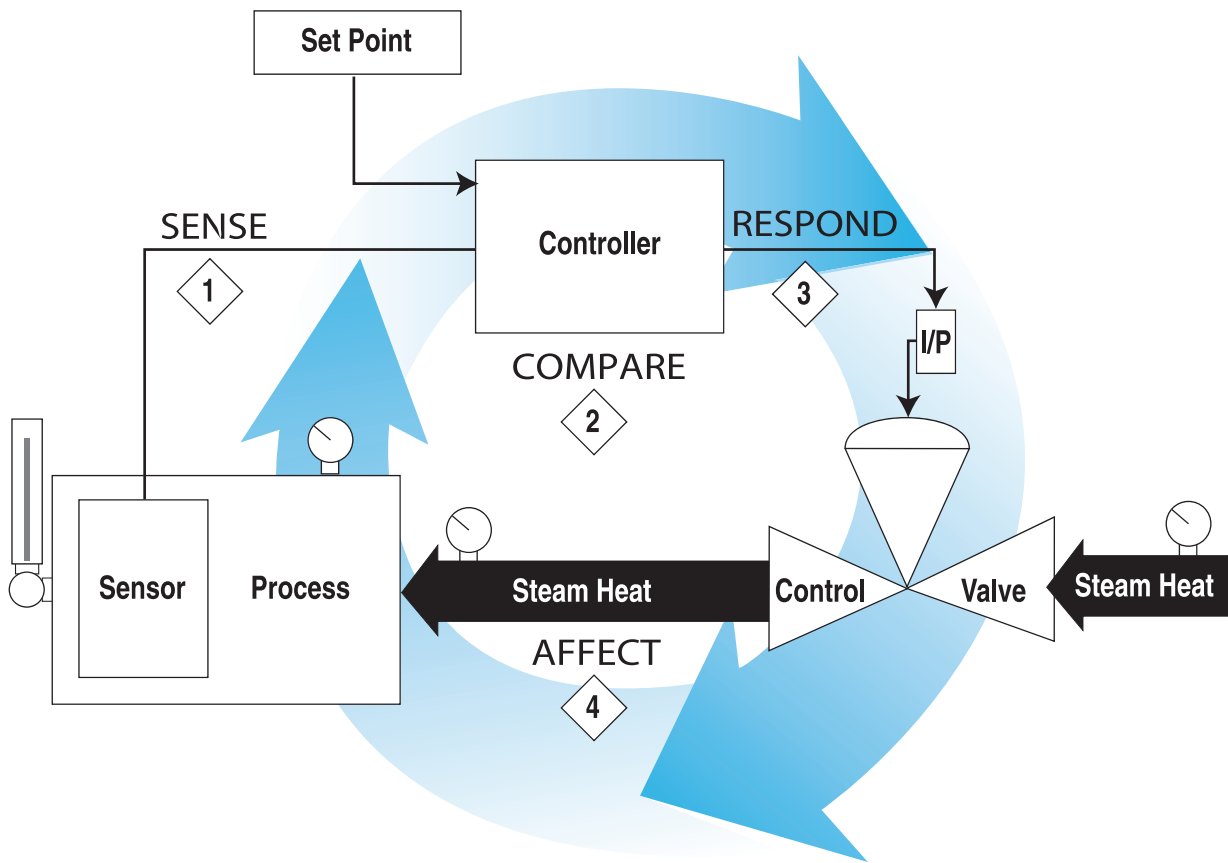


# Control Loop

## Understanding a Control Loop



### Control Loop

A control loop is a process management system designed to maintain a process variable at a desired set point. Each step in the loop works in conjunction with the others to manage the system. Once the set point has been established, the control loop operates using a four-step process.

#### 1 Sense

Measure the current condition of the process using a sensor, which can be an electronic (thermocouple, RTD or transmitter) or a mechanical device (thermal system).

#### 2 Compare

Evaluate the measurement of the current condition against the set point using an electronic or electric contact controller.

#### 3 Respond

React to any error that may exist by generating a corrective pneumatic or electric control signal.

#### 4 Affect

Actuate a final control element (valve, heater or other device) that will produce a change in the process variable.

The loop continually cycles through the steps, affecting the process variable in order to maintain the desired set point. Trerice is unique in its ability to provide all of the necessary components to create a complete control loop.

The following list are components required to create a basic control loop.  
All products can be found within this catalog.

## Electro-Pneumatic Control Loop (PID)

Temperature		Pressure
<ul style="list-style-type: none"> <li>• Thermocouple or RTD Temperature Sensor</li> <li>• Thermowell</li> </ul>	Sense	<ul style="list-style-type: none"> <li>• 700Plus Series Industrial Transmitter Gauge</li> </ul>
<ul style="list-style-type: none"> <li>• TR890 Series Electronic Controller</li> <li>• No. TA901 I/P Transducer</li> <li>• No. TA987 Air Filter/Regulator</li> </ul>	Compare-Respond	<ul style="list-style-type: none"> <li>• TR890 Series Electronic Controller</li> <li>• No. TA901 I/P Transducer</li> <li>• No. TA987 Air Filter/Regulator</li> </ul>
<ul style="list-style-type: none"> <li>• 910 or 940 Series Control Valve</li> <li>• 1100 Series Pipeline Strainer</li> </ul>	Affect	<ul style="list-style-type: none"> <li>• 910 or 940 Series Control Valve</li> <li>• 1100 Series Pipeline Strainer</li> </ul>

## Electric Control Loop (PID)

Temperature		Pressure
<ul style="list-style-type: none"> <li>• Thermocouple or RTD Temperature Sensor</li> <li>• Thermowell</li> </ul>	Sense	<ul style="list-style-type: none"> <li>• 700Plus Series Industrial Transmitter Gauge</li> </ul>
<ul style="list-style-type: none"> <li>• TR890 Series Electronic Controller</li> </ul>	Compare-Respond	<ul style="list-style-type: none"> <li>• TR890 Series Electronic Controller</li> </ul>
<ul style="list-style-type: none"> <li>• 940E Series Control Valve</li> <li>• 1100 Series Pipeline Strainer</li> </ul>	Affect	<ul style="list-style-type: none"> <li>• 940E Series Control Valve</li> <li>• 1100 Series Pipeline Strainer</li> </ul>

## Electric Control Loop (On/Off)

Temperature	
<ul style="list-style-type: none"> <li>• L84000 Series Electric Contact Controller</li> <li>• Thermowell</li> </ul>	Sense-Compare-Respond
<ul style="list-style-type: none"> <li>• 960 Series Solenoid Valve</li> <li>• 1100 Series Pipeline Strainer</li> </ul>	Affect

## Self-Operating Regulation Loop (Proportional)

Temperature		Pressure
<ul style="list-style-type: none"> <li>• 91000 Series Temperature Regulator</li> <li>• Thermowell</li> <li>• 1100 Series Pipeline Strainer</li> </ul>	Sense-Compare-Respond-Affect	<ul style="list-style-type: none"> <li>• 921 Series Pressure Regulator</li> <li>• 1100 Series Pipeline Strainer</li> </ul>