



PulseCooling™

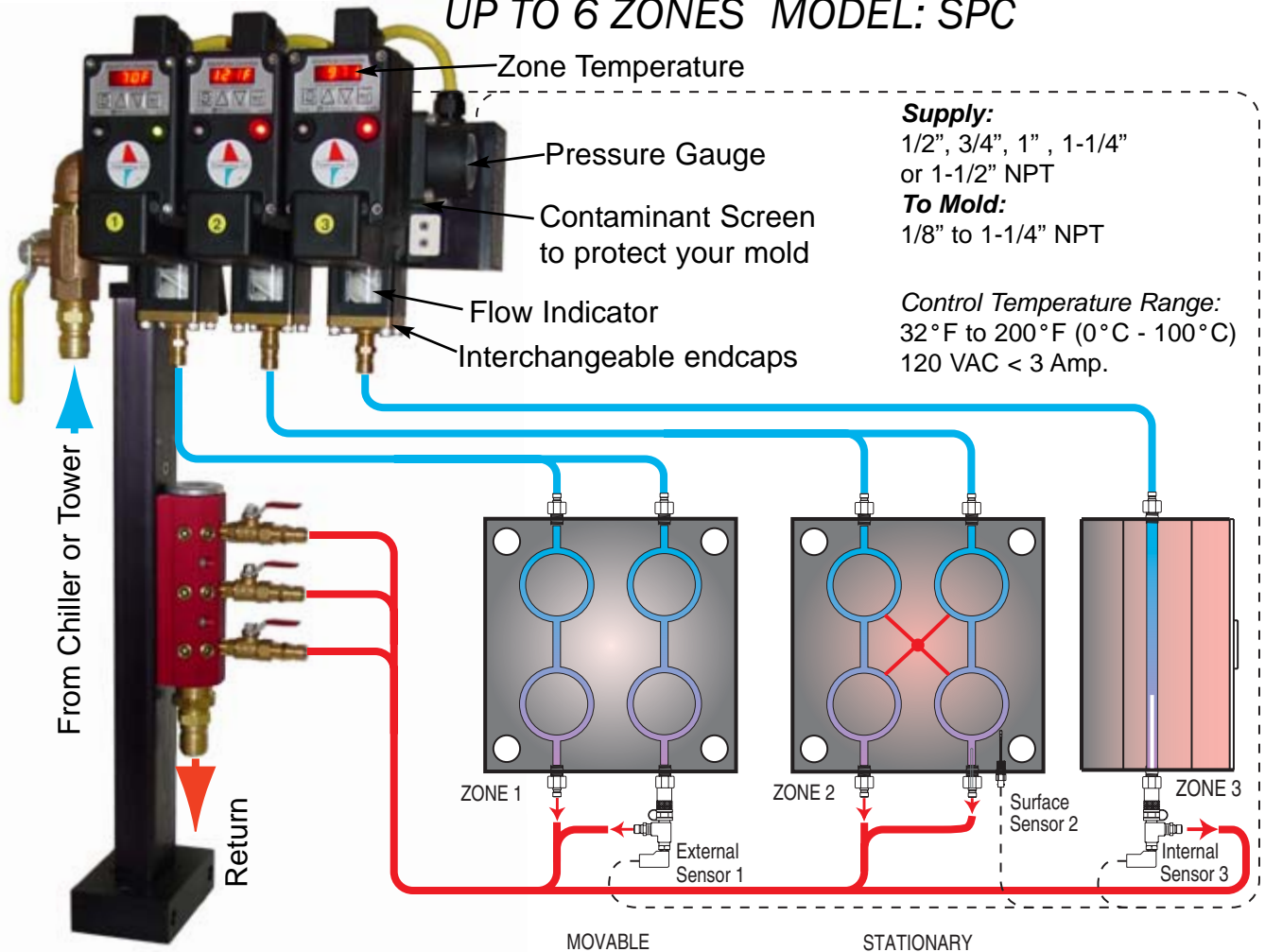
# StackPulse Controller™

**LOW COST  
HIGH PERFORMANCE MOLD COOLING**

**Better cycle  
Higher parts quality  
Adaptation to any mold  
Excellent Return On Investment**

**Use with Mold Surface Temperature Sensors  
Internal Waterline Sensors  
External Waterline Sensors**

**UP TO 6 ZONES MODEL: SPC**



**CTO** PRODUCTS, INC.

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SPC-S8-A1

# StackPulse Controller™

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The SPC - **StackPulse Controller™** is the newest addition to the PulseCooling in process temperature controls. The SPC has embedded microchip technology for compactness, longevity and high performance.

## **DESCRIPTION OF StackPulse Controller™**

The **StackPulse Controller™** controls the mold surface, not just the water line. Now you can have a Real Time read out and direct precision control of the mold surface temperature.

## **PRINCIPLE OF OPERATION**

As heat is induced into the mold, with the melt, at the start of the cycle, the temperature increase of the mold surface is detected by a sensor and stored for reference in the StackPulse Controller. The microprocessor converts this into a cooling pulse, which is a timed injection of coolant, occurring at the beginning of each cycle, immediately after the mold has been filled. The coolant injection (-BTU) exactly matches the melt (+BTU) thus compensating for all variables that can influence part quality. This cooling technology will result in the highest quality parts quality at the best possible cycle time with a minimum of water consumption and energy use.

Remember, high quality molding is the result of what happens in the machine and the mold, not in the inspection after the molding is completed.

## **ADVANTAGES OF PULSE MODULATED COOLING**

### **INCREASED PRODUCTION**

Use of cold water provides a high temperature differential between mold surface and coolant. This high delta t results in efficient mold cooling with a improved cycle.

### **HIGHER QUALITY PRODUCTION**

During the OFF period of the pulse modulated cooling cycle, the mold will seek thermal equilibrium. This heat gradient dissipation results in consistent quality molded parts.

### **AUTOMATED PRODUCTION**

After the operator chooses and sets the mold surface temperature, the StackPulse Controller™ will determine the cooling requirements of each molding cycle, and automatically repeat the selected temperature. Each cooling pulse will compensate changes in cycle time, melt temperature, cycle interruption, water pressure, ambient temperature and platen temperatures changes.

### **PROCESS LIMITS WARNING**

A visual alarm warns if the process temperature is above or below the selected limits.

### **COOLING FLUID SOURCE**

The **StackPulse Controller™** valve is supplied with cold process water from tap, tower or chiller.

### **WATER CONSUMPTION**

A Minimum amount of water is used; since the maximum of BTU is absorbed from the cold process water, and during the off pulse period the dormant water will absorb heat. This reduces the total amount of water used. Thus more Process water is available for the area with the greatest demand of cooling.

### **ADVANCED FEATURES**

Additional features such as maximum and minimum temperature alarms can be displayed. The measured values can be displayed in either English or Metric units. All selections are done digitally on the keyboard.

# Stack Pulse Controller™ Specifications

## Unit

Power: 24 VAC, 60 Hz. or 24 VDC  
 Current Draw: 500 mA

Display Repeatability: +/- 1 digit  
 Display Units: English or Metric

## Temperature Inputs

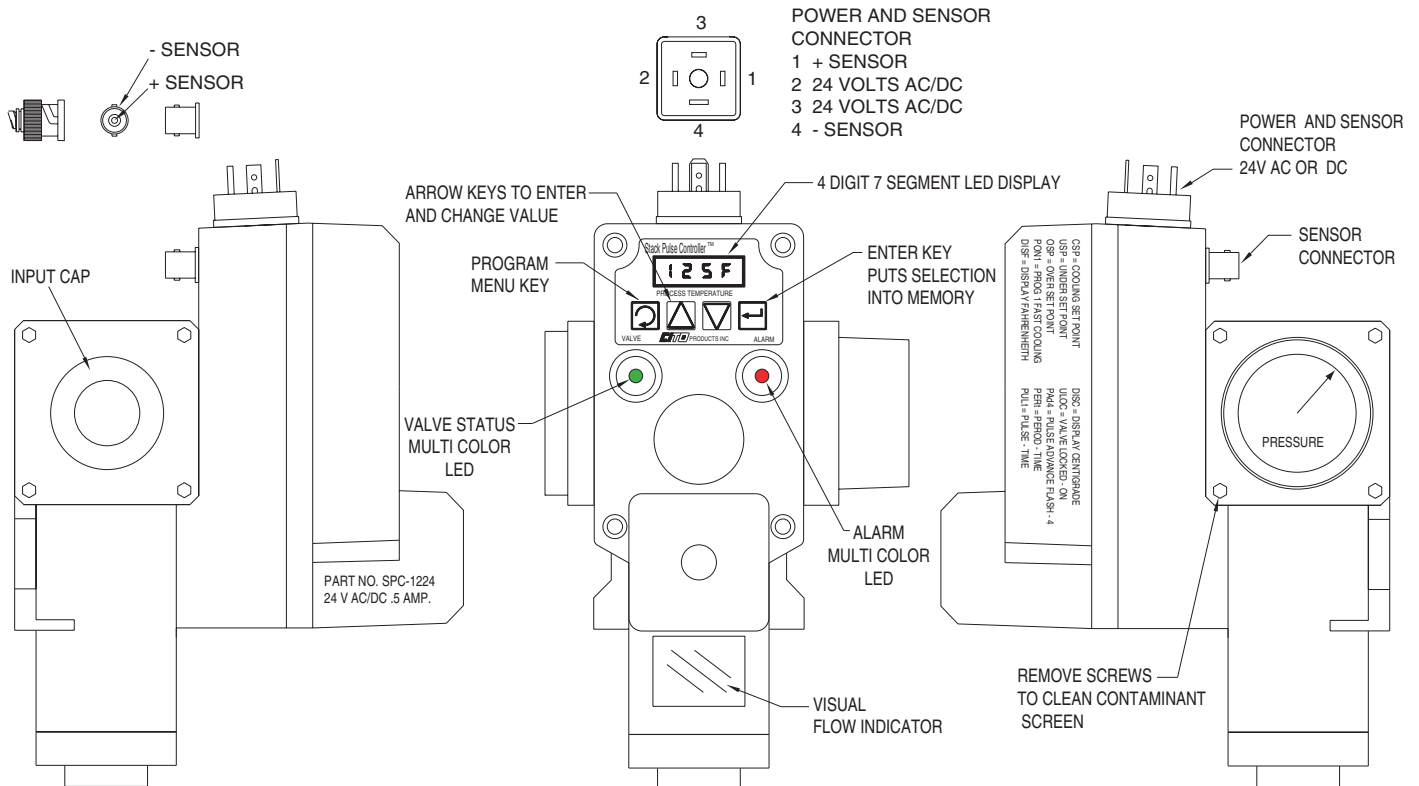
Sensor Type: Thermistor  
 Temperature Accuracy: +/- 1 °F

Temperature Range: 32° F to 200° F  
 0°C to 93.33°C

Input Sample Rate: Once per 200 ms  
 Display Update: Once per second  
 Probe Status: Continuously monitored  
 EEE4 = Open  
 EEE5 = Shorted

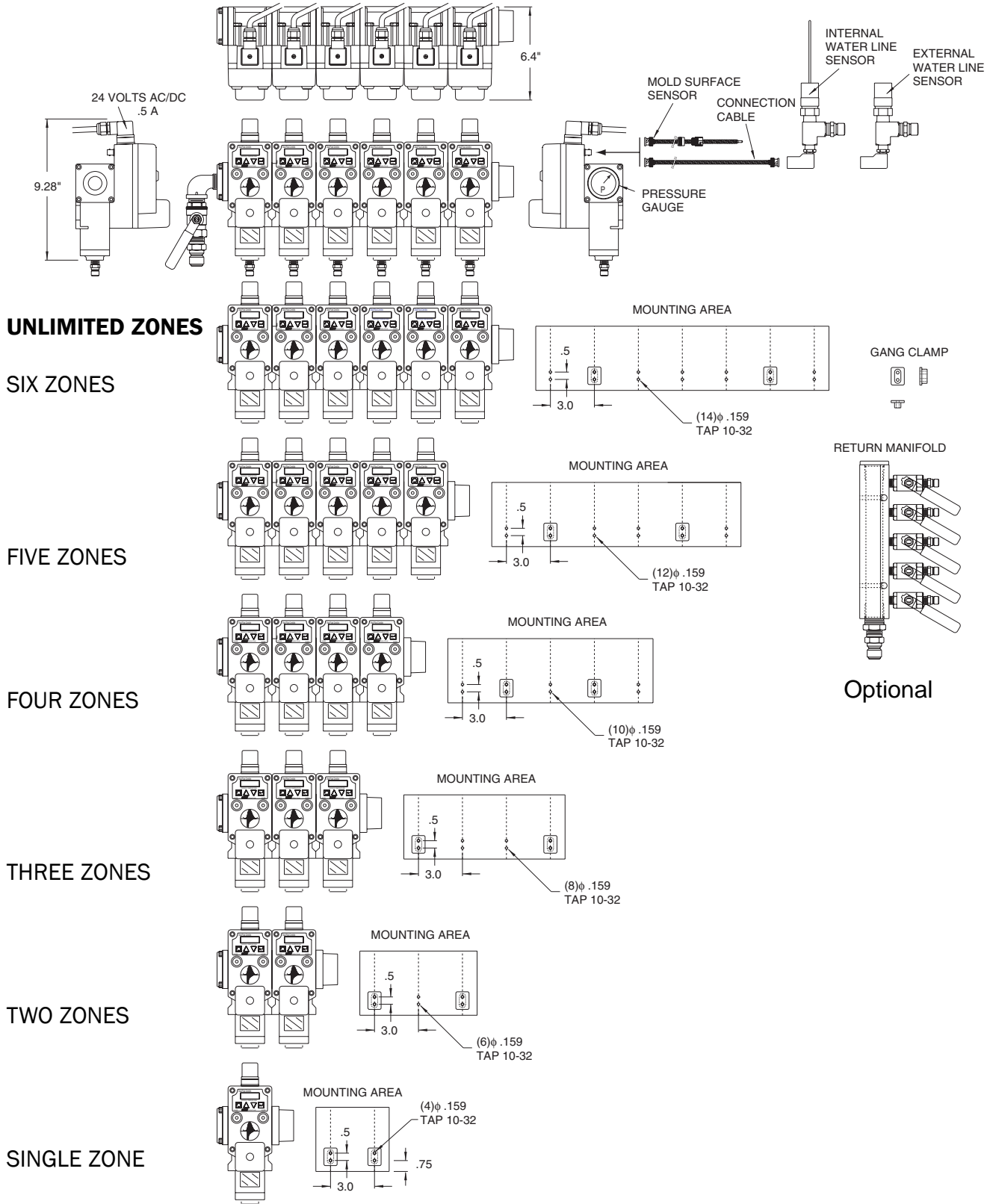
## Product Description

### StackPulse Controller™

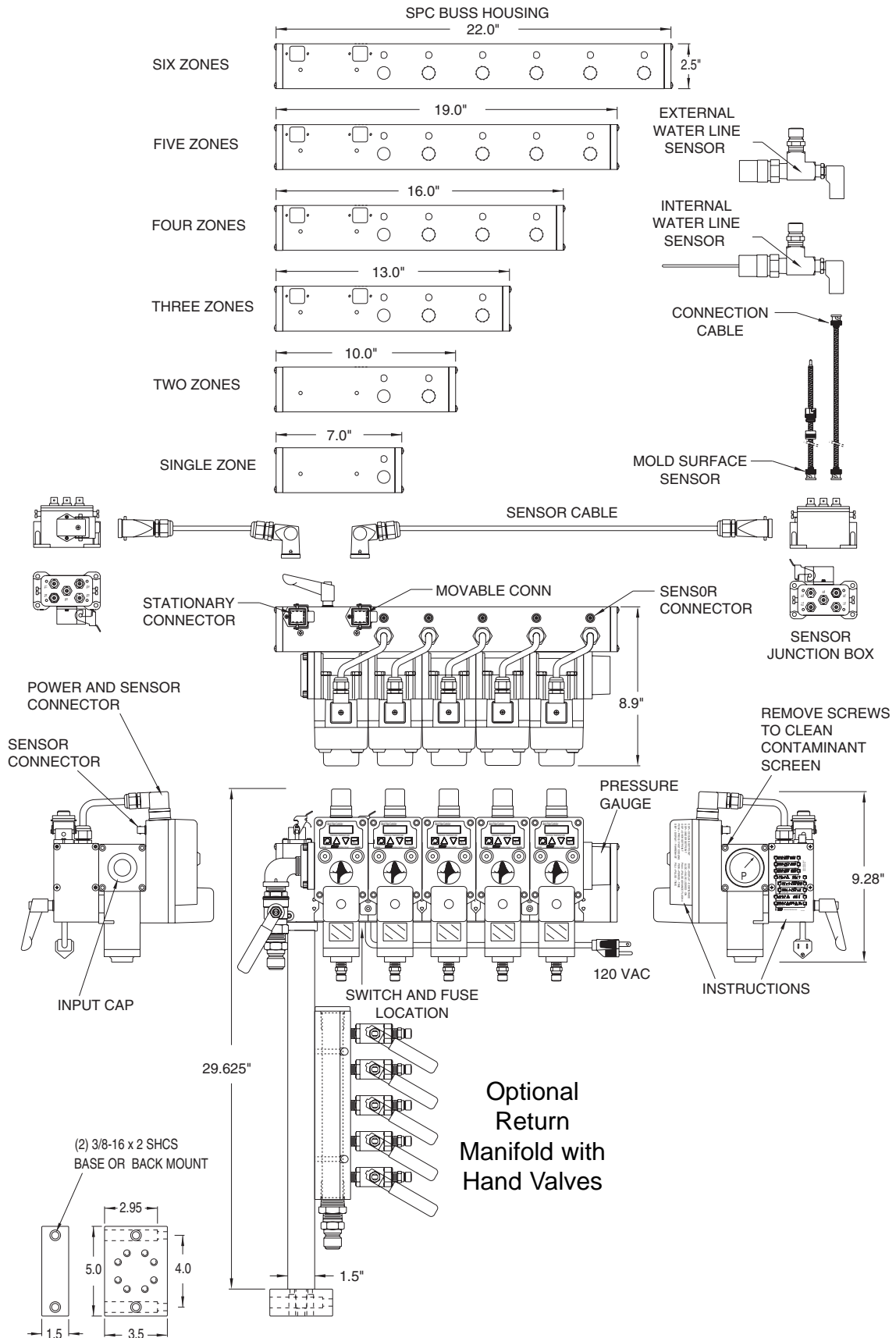


Note: Input CAP may be reversed with pressure gauge.

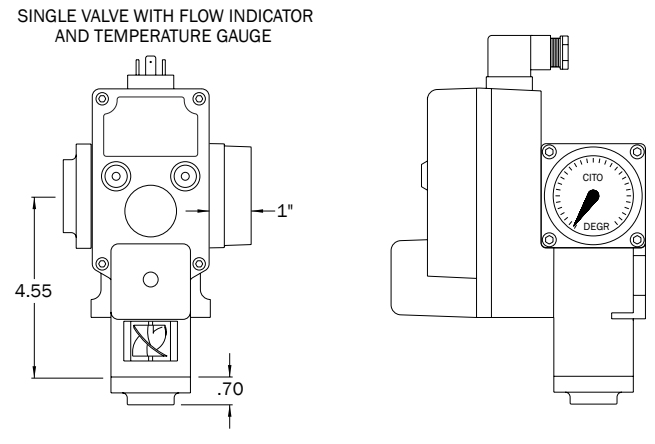
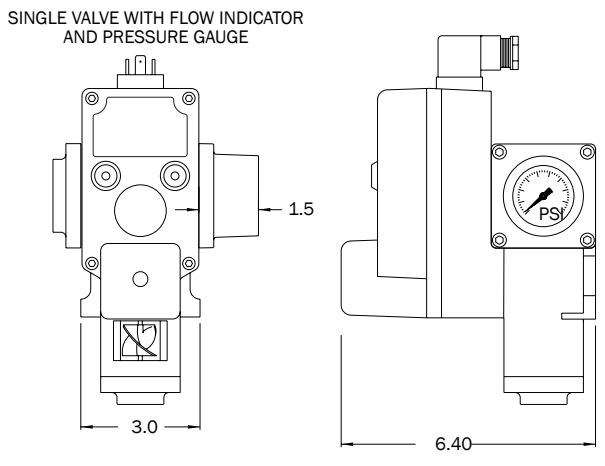
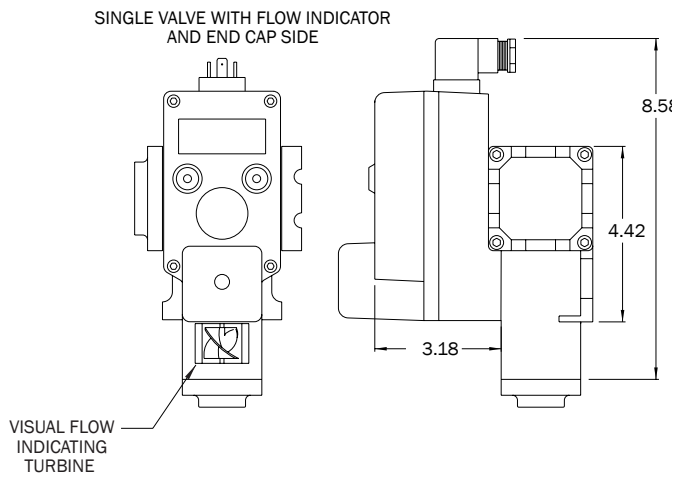
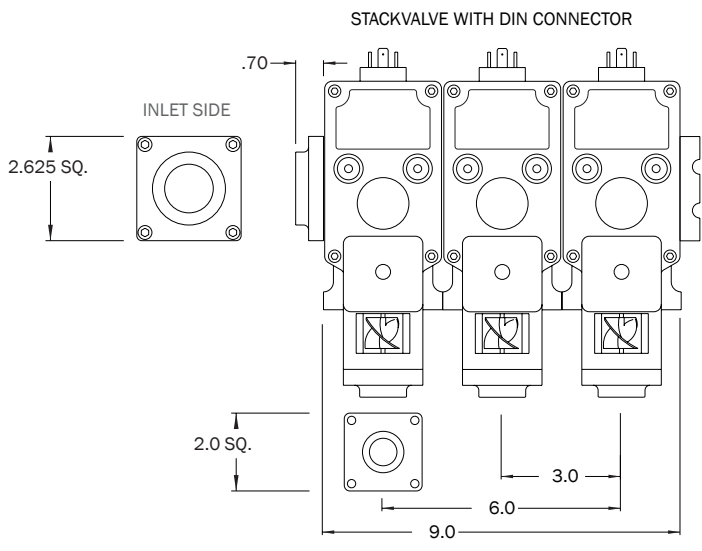
# StackPulse Controller™, 24 VOLTS AC OR DC



# StackPulse Controller™, 120 / 240 VOLTS AC



# StackPulse Controller™ Dimensions



# Mold Connection Diagrams

To obtain the highest performance from your StackPulse Controller the sensor should be placed close to the molding part.

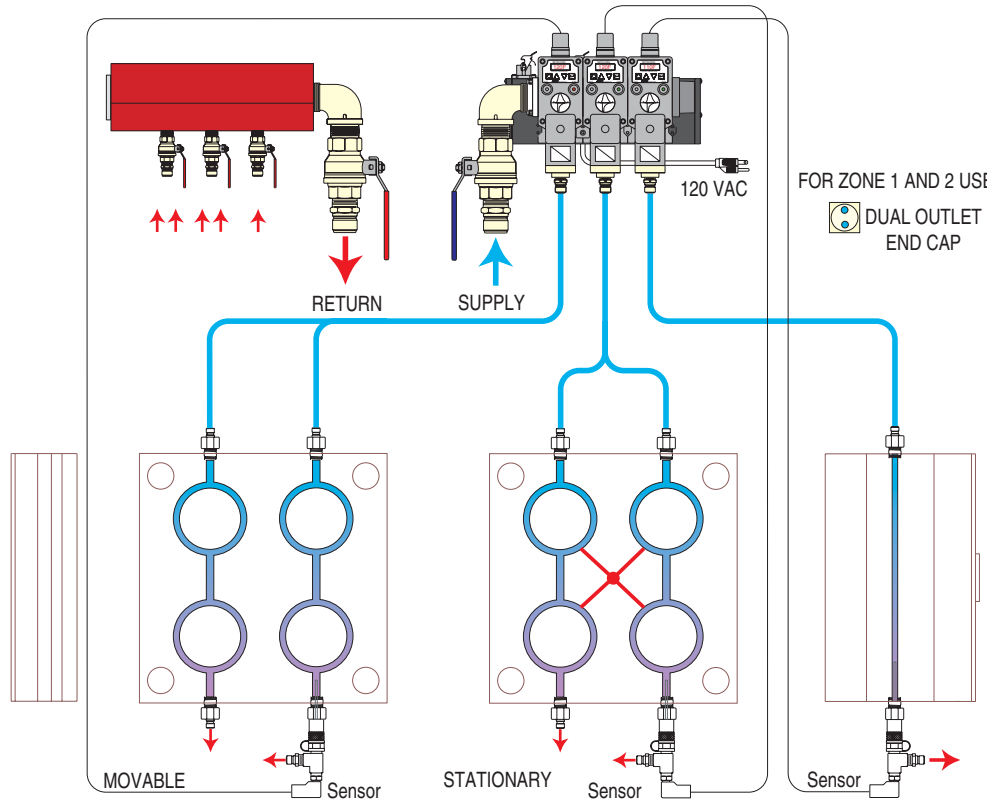
## Three Zones

Parallel - Series Connection

Advantages:

Direct control of movable, stationary and hot runner.

Highest Reynolds number obtained



## Three Zones

Series Connection

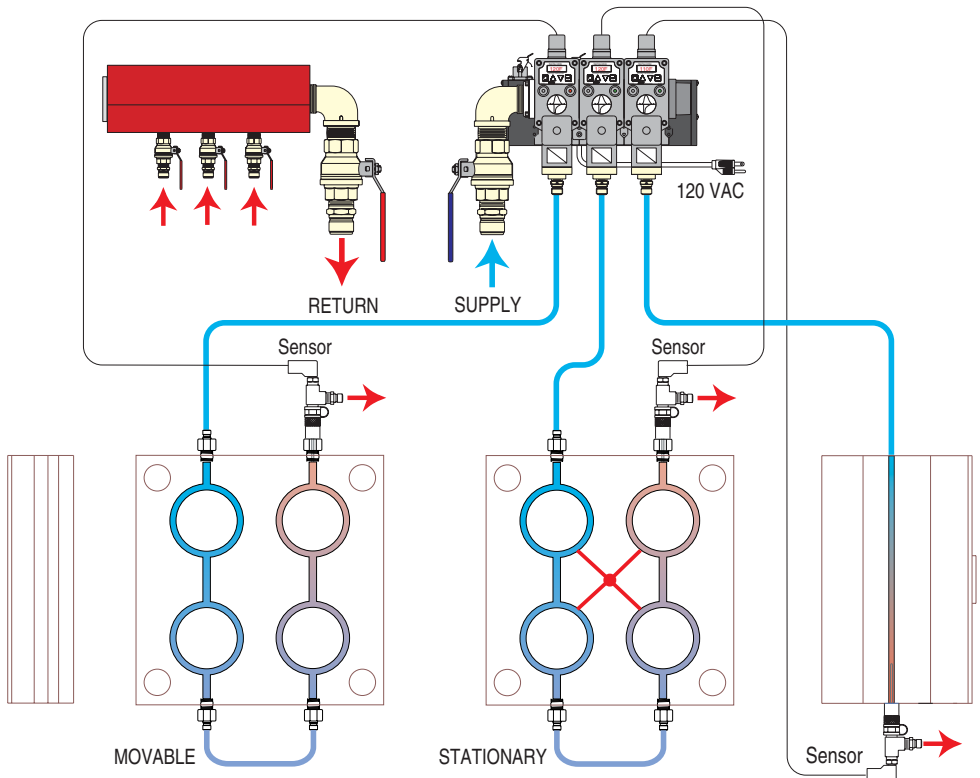
Advantages:

Low water consumption  
One supply and Return per mold half.  
Direct control of movable, stationary and hot runner.

Apply when limited cooling water is available

This will minimize the pressure drop on the water supply thus maintain a higher flow velocity thus cool efficiently.

Check part temperature and final part size for post shrinkage between the first and last cavity to cool





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