

# FLOW COMMANDER

## tuning procedures

### Flow Control Parameter Tuning:

- Manual tuning is best when the system remains online during the tuning process
- Standard Flow Commander control is inverse, requiring the **Initial Response** to be a negative number (this tuning tutorial disregards the minus sign (-) when instructing to increase or decrease values, therefore, increasing -0.1 by 0.2 equals -0.3)
- The fourstep process is as follows:
  - Set **Response/Time** and **Dampening** to zero and set **Initial Response** to -0.05
  - Increase **Initial Response** until the output begins to oscillate around the desired setpoint
  - Reduce **Initial Response** to approximately one-half of this value until the oscillation is about one-fourth the size it first was
  - Increase **Response/Time** to adjust the behavior of the offset/oscillations so that the system will resolve in an acceptable amount of time (acceptable resolving time is dependent on the user/experiment at hand)

Variable Change (increase)	Rise Time	Overshoot	Resolving Time	Steady State Error Change	System Stability
<b>Initial Response</b>	Decrease	Increase	Small Decrease	Decrease	Decrease
<b>Response/Time</b>	Small Decrease	Increase	Increase	Large Increase	Decrease
<b>Dampening</b> (in most cases this value should be set to zero)	Small Decrease	Decrease	Decrease		

- Rise time: the amount of time necessary for the initial output of the Flow Commander to rise past 90% of its desired value
- Overshoot: the amount by which the initial response exceeds the set-point value
- Resolving time: the amount of time required by the system to converge to the set-point value
- Steady-state error: the measured difference between the system output and the set-point value