

Crimson 3.0 Graphite/MC/PTV PID Module Basics



Commonly Used Parameters

Loop – Status – PV
Loop – Control – ReqSP
Loop – Status – HeatPower/CoolPower
Loop – Control – Power
Loop – Control – ReqManual
Loop – Control – ReqTune
Loop – Status – TuneDone
Loop – Status – TuneFail
Loop – Status – ActSP
Loop – Status – AckManual
Loop – Status – AckTune

Turning the Loop Off

Properly turning off a loop will prevent loss of control when set point control is once again required.

Required Module Properties

Loop – Control – ReqManual
Loop – Control – Power

Optional Module Properties

Loop – Status – AckManual

Action

1. Set ReqManual to 1
2. Set Power to 0

Example: ReqManual = 1, Power = 0

Manual Control of the Loop

Properly turning off a loop will prevent loss of control when set point control is once again required.

Required Module Properties

Loop – Control – ReqManual
Loop – Control – Power

Optional Module Properties

Loop – Status – AckManual

Action

1. Set ReqManual to 1
2. Set Power to required output level 0-10000 (0-100.00%)

Autotune the Loop

Required Module Properties

Loop – Control – ReqTune
Loop – Control – ReqSP
Loop – Status – TuneDone

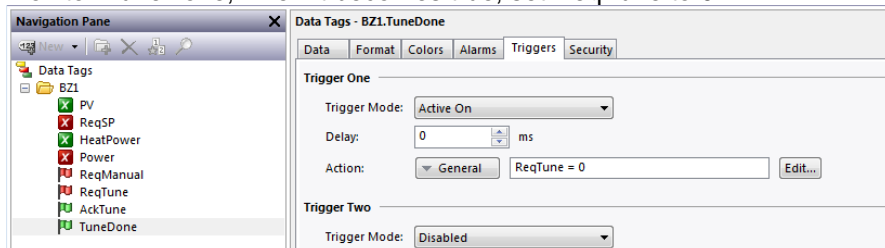
Optional Module Properties

Loop – Status – AckTune
Loop – Status – PV



Action

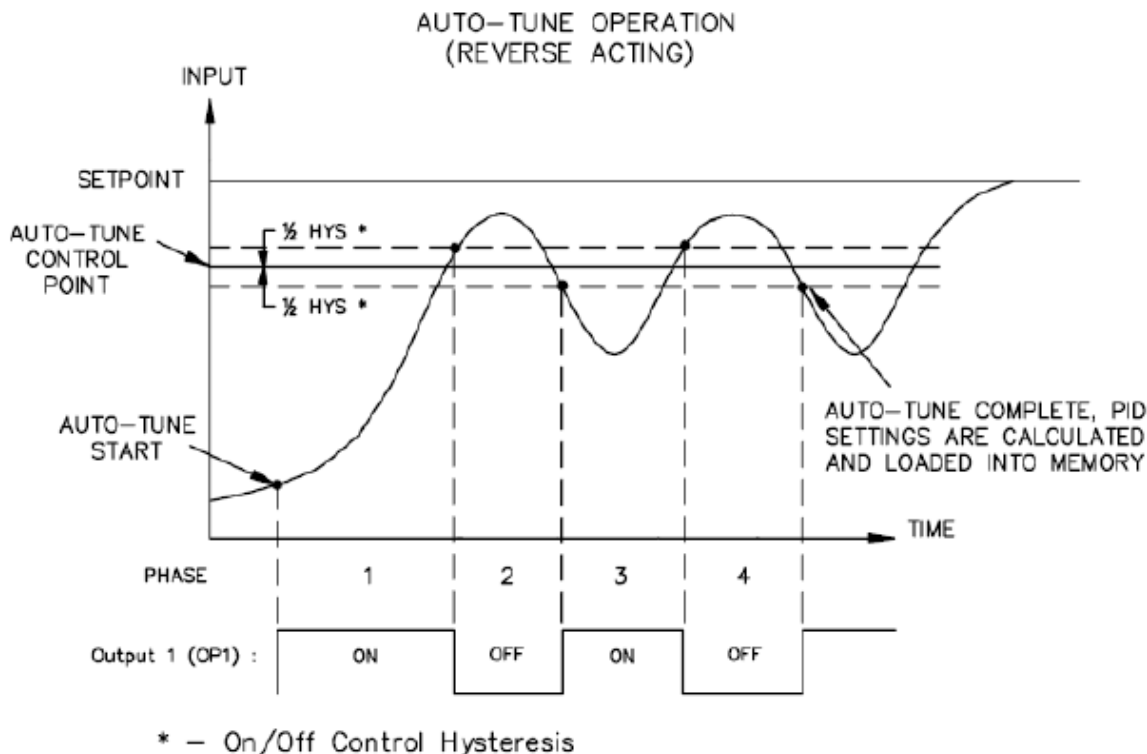
1. Set ReqTune to 1
2. Monitor TuneDone, when it becomes true, set ReqTune to 0.



Note: Adding an Active On Trigger to the tag mapped to TuneDone with an action to clear ReqTune is recommended.

Overview

Auto-tune may be used to establish the optimal P, I, D, and Power Filter values. By cycling the process through four on/off cycles, the module learns information about the process, and determines the best values.



As shown above, the setpoint used during auto-tune is the value 75 % above the difference between the current PV and the setpoint. This allows the oscillations to occur close to setpoint, while avoiding excessive overshoot. Since the module performs on/off control during auto-tune, it is important to set a suitable On/Off Hysteresis value prior to invoking auto-tune.

Customization of the PID set that auto-tune will yield is achieved by adjusting the Tune Response setting. The Tune Response setting can be set to Very Aggressive, Aggressive, Default, Conservative, or Very Conservative. Further, the Tune Response setting can be adjusted by writing 0-4 respectively to the Tune Response register.

Red Lion Technical Support

If you have any questions or trouble contact Red Lion Technical Support by emailing support@redlion.net or calling 1-877-432-9908.

