



UDC 3200 Application Note

Accutune Set Up Group

Introduction

Accutune III automatically calculates GAIN, RATE, and RESET TIME (PID) tuning constants for your control loop. When initiated on demand, the Accutune algorithm measures a process step response and automatically generates the PID tuning constants needed for no overshoot on your process.

Fuzzy, Fuzzy Overshoot Suppression: When enabled, this configuration will suppress or eliminate any overshoot that may occur as a result of the existing tuning parameters, as the PV approaches the setpoint.

Tune, Demand Tuning. The tuning process is initiated through the operator interface keys or via a digital input (if configured). The algorithm then calculates new tuning parameters and enters them in the tuning group. *Tune* will operate with PIDA, PIDB, PD+MR and Three Position Step Control algorithms.

SP, SP Tuning SP tuning continuously adjusts the PID parameters in response to setpoint changes. You can select tuning on minimum setpoint changes of 5 % up to 15 % span. Perform SP tuning after you have configured the controller. SP Tuning does not operate with the Three Position Step Control algorithm.

Simplex Tuning is used when a Simplex Control Algorithm is configured and uses the current SP value and alters the output over the Output Limit Range.

Duplex Tuning is used when a Duplex Control Algorithm is configured. To perform a Duplex Tune, Two Local Setpoints must be configured.

Function Prompts

ACCUTUNE Group Function Prompts

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
FUZZY	DISABLE ENABLE	FUZZY OVERSHOOT SUPPRESSION —Can be enabled or disabled independently of whether Demand Tuning or SP Tuning is enabled or disabled. DISABLE —Disables Fuzzy Overshoot Suppression. ENABLE —The instrument uses Fuzzy Logic to suppress or minimize any overshoot that may occur when PV approaches SP. It will not recalculate any new tuning parameters.



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
ACCUTUNE	DISABLE TUNE	<p>ACCUTUNE III</p> <p>DISABLE —Disables the Accutune function.</p> <p>DEMAND TUNING—If TUNE is selected, and tuning is initiated through the operator interface or digital input (if configured), the algorithm calculates new tuning parameters and enters them into the tuning group. This tuning requires no process knowledge and does not require line out for initialization.</p>
<p>DUPLEX</p> <p><i>This prompt only appears when a Duplex Control Algorithm has been configured</i></p>	MANUAL AUTO DISABLE	<p>DUPLEX ACCUTUNING III – These prompts only appear when a duplex output type has been configured.</p> <p>MANUAL – Tune manually using LSP 1 and LSP 2 values. LSP 1 is used to derive tuning parameters associated with HEAT (output > 50 %). LSP 2 is used to derive tuning parameters associated with COOL (output < 50 %).</p> <p>AUTOMATIC – Tuning is performed automatically on both HEAT and COOL sequentially. LSP 1 is used for HEAT tuning and LSP 2 is used for COOL tuning. To initiate tuning, either LSP 1 or LSP 2 must be in use.</p> <p>DISABLE – The current SetPoint is used to derive a single set of blended tuning parameters. This tuning is performed over the range of the output limits similar to Simplex Tuning. The Tuning Parameters derived are placed into both the HEAT and COOL tune sets (PID 1 and PID 2).</p>



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<p>AT ERROR (Read Only)</p>	<p>NONE</p> <p>RUNNING</p> <p>ABORT</p> <p>SP2</p>	<p>ACCUTUNE ERROR STATUS—When an error is detected in the Accutune process, an error prompt will appear.</p> <p>NONE—No errors occurred during last Accutune procedure.</p> <p>RUNNING—An Accutune process is still active checking process gain, even though “T” is not lit. It does not affect keyboard operation.</p> <p>CURRENT ACCUTUNE PROCESS ABORTED— Caused by one of the following conditions:</p> <ul style="list-style-type: none"> • changing to manual mode • digital input detected • in heat region of output but a cool output was calculated, or vice versa. <p>SP2—LSP2 not configured or a Setpoint other than LSP1 or LSP2 is in use.</p>
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