



# UDC 2500 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 the Three Position Step Control algorithm. Tuning parameters resulting in either a Fast

### Function Prompts

**Table Error! No text of specified style in document.-1 ATUNE Group (Numeric Code 300) Function Prompts**

Function Prompt Lower Display		Selection or Range of Setting Upper Display		Parameter Definition
English	Numeri c Code	English	Numeri c Code	
<b>FUZZY</b>	<b>301</b>	DIS  ENAB	0  1	<p><b>FUZZY OVERSHOOT SUPPRESSION</b>—Can be enabled or disabled independently of whether Demand Tuning or SP Tuning is enabled or disabled.</p> <p><b>DISABLE</b>—Disables Fuzzy Overshoot Suppression.</p> <p><b>ENABLE</b>—The UDC uses Fuzzy Logic to suppress or minimize any overshoot that may occur when PV approaches SP. It will not recalculate any new tuning parameters.</p>
<b>TUNE</b>	<b>302</b>	DIS TUNE	0 1	<p><b>ACCUTUNE</b></p> <p><b>DISABLE</b> —Disables the Accutune function.</p> <p><b>DEMAND TUNING</b>—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>



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Function Prompt Lower Display		Selection or Range of Setting Upper Display		Parameter Definition
English	Numeri c Code	English	Numeri c Code	
<b>DUPLEX</b>	<b>303</b>			<b>DUPLEX ACCUTUNING</b> – These prompts only appear when a duplex output type has been configured.
		MANU		<b>MANUAL</b> – Operator does manual tuning on both sides using LSP1 on Heat side and LSP2 on Cool side.
		AUTO		<b>AUTOMATIC</b> – Tuning process will produce tuning constants based upon LSP1 for the Heat side and LSP2 for the Cool side. Both Heat and Cool sides will tune sequentially.
		DIS		<b>DISABLE</b> – Disable Duplex Tuning. This selection will provide blended tuning over the full range with both Heat and Cool tuning constants set to the same values. This selection will perform Accutune using the only the current working setpoint.
<b>AT ERR</b> (Read Only)	<b>304</b>	NONE	0	<b>ACCUTUNE ERROR STATUS</b> —When an error is detected in the Accutune process, an error prompt will appear. <b>NONE</b> —No errors occurred during last Accutune procedure.
		ABRT	4	<b>CURRENT ACCUTUNE PROCESS ABORTED</b> —Caused by one of the following conditions: <ul style="list-style-type: none"> <li>• changing to manual mode</li> <li>• digital input detected</li> <li>• changing SP while PV (error) tune in progress</li> <li>• in heat region of output but a cool output is calculated, or vice versa.</li> </ul>
		RUN	5	<b>RUNNING</b> —An Accutune process is still active checking process gain, even though “TUNE” is not lit. It does not affect keyboard operation.