



UDC 3200 Application Note

Output Set Up Group

Introduction

This group deals with various output types in the controller, the Digital Output Status and the Current Output operation.

ATTENTION The Tuning Group is automatically configured to have two PID sets when a Duplex Control Algorithm is selected.

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
OUT ALG		<p>The OUTPUT ALGORITHM lets you select the type of output you want. Not applicable with Control algorithm prompt 3PSTEP.</p> <p>Selections are hardware dependent. For example, if the controller does not have a current output, then none of the prompts for Output Algorithms that need a current output will appear. Likewise, if the controller does not have a relay output, then none of the prompts that need a relay output will appear.</p> <p>ATTENTION For all Duplex Output forms, PID heat parameters apply for controller output greater than 50 %; PID cool parameters apply for controller output less than 50 %.</p>
	TIME	<p>TIME SIMPLEX —This output algorithm uses Digital Output 1 for Time Proportional Control. The output is updated per the Loop sampling rate selection. Time Proportional Output has a resolution of 4.44 msec. Cycle Time is adjustable from 1 to 120 seconds.</p>
	CURRENT	<p>CURRENT SIMPLEX Type of output using one 4 mA to 20 mA signal that can be fed into a positive or negative grounded load of 0 to 1000 ohms. This signal can easily be configured for 4-20 mA or 0-20 mA operation via the CO RANGE configuration, below.</p>
	POSITON	<p>POSITION PROPORTIONAL —Type of output using two relays and a motor that has a 100 to 1000 ohms feedback slidewire.</p> <p>This output algorithm selection forces Input 2 to the SLIDEW selection when the Control Algorithm is any selection other than 3PSTEP.</p> <p>ATTENTION Other prompts affected: DEADBAND, IN2 TYPE</p>



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	TIME D	<p>TIME DUPLEX—This output algorithm uses Digital Outputs 1 and 2 for Duplex Time Proportional Control. The outputs are updated per the Loop sampling rate selection. Time Proportional Output has a resolution of 4.44 msec. Cycle Time is adjustable from 1 second to 120 seconds.</p>
	CUR D	<p>CURRENT DUPLEX is similar to current simplex but uses a second current output. The second output is usually scaled so that zero and span correspond with 0 % and 50 % output (cool zone). When the output is 0 % to 50 %, the controller uses tuning parameter set #2, when the output is 50 % to 100 % it uses set #1.</p> <p>ATTENTION <i>Other prompts affected: OUT RNG</i></p>
	CUR TI	<p>CURRENT/TIME DUPLEX is a variation of duplex with current active for 0 % to 50 % output (tuning set 2) and time is active 50 % to 100 % output (tuning set 1).</p> <p>Relay controls heat, current controls cool.</p> <p>ATTENTION <i>Other prompts affected: OUT RNG</i></p>
	TI CUR	<p>TIME CURRENT DUPLEX similar to CUR TI except that current is active for 50 % to 100 % and time is active for 0 % to 50 %.</p> <p>Relay controls cool, current controls heat.</p> <p>ATTENTION <i>Other prompts affected: OUT RNG</i></p>
OUT RNG	50 PCT	<p>CURRENT DUPLEX RANGE ALGORITHM — Used with Output Algorithm selections CUR D, CUR TI, or TI CUR.</p> <p>CURRENT DUPLEX RANGE (SPLIT)—This setting should be used for Relay/Current and Current/Relay Duplex Outputs. It can also be used for Current Duplex when an Auxiliary Output board is present. This enables the normal control current output to provide heat control and the auxiliary current output to provide cool control. To enable this:</p> <ul style="list-style-type: none"> • AUX OUT in the Options Set Up group must be selected for Output. • The Auxiliary Current Output is scaled as desired for 0-50 % controller output. • Deadband for this configuration only applies to the Current Output. The Auxiliary Output must have the Deadband scaled in. <p>FOR EXAMPLE:</p>



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	100PCT	<p>If a 2 % Deadband is desired, then enter 2.0 for the Deadband selection in the Control Algorithm group. This will apply Deadband to the Current Output. In the Options group, set the Auxiliary Output LOW VAL selection to 49.0 and the HIGH VAL selection to 0.0.</p> <p>CURRENT DUPLEX RANGE (FULL) enables the Current Output to provide both heat and cool functions for control over 0-100 % of the controller output. The PID heat parameters apply when the output is greater than 50 % and the PID cool parameters apply when the output is less than 50 %. The second current output is not required for this type of duplex operation.</p>								
RLYSTATE	1OF 2OF 1ON 2OF 1OF 2ON 1ON 2ON	<p>DIGITAL OUTPUT STATUS AT 0 % OUTPUT allows the following selections:</p> <table border="0"> <tr> <td>1OF 2OF</td> <td>Output 1 de-energized Output 2 de-energized</td> </tr> <tr> <td>1ON 2OF</td> <td>Output 1 energized Output 2 de-energized</td> </tr> <tr> <td>1OF 2ON</td> <td>Output 1 de-energized Output 2 energized</td> </tr> <tr> <td>1ON 2ON</td> <td>Output 1 energized Output 2 energized</td> </tr> </table>	1OF 2OF	Output 1 de-energized Output 2 de-energized	1ON 2OF	Output 1 energized Output 2 de-energized	1OF 2ON	Output 1 de-energized Output 2 energized	1ON 2ON	Output 1 energized Output 2 energized
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RLY TYPE	MECHAN SOL ST	<p>RELAY CYCLE TIME INCREMENT selection is used only for Time Simplex and Duplex output configurations. This configuration sets the increment size of the relay cycle times in the Tuning and Tuning 2 Set Up groups.</p> <p>ELECTROMECHANICAL RELAY—Cycle time in one-second increments.</p> <p>SOLID STATE RELAY—Cycle time in 1/3 second increments. This is useful for solid state relay applications that require shorter cycle times. DO NOT use this setting unless cycle times of less than 1 second are required.</p> <p>ATTENTION The Lockout selection must be set to NONE in order to view this selection.</p>								
MOTOR TI	5 to 1800 seconds	<p>MOTOR TIME – Appears only when “POSITON” is selected as the Output algorithm. This is the time it takes the motor to travel from 0 to 100% (fully closed to fully open). This time can usually be found on the nameplate of the motor.</p>								



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CUR OUT	DISABLE INPUT 1 INPUT 2 PV DEV OUTPUT SP LSP RSP IN ALG 1	<p>CURRENT OUTPUT— If Current Output #1 is not used to perform one of the above output algorithms, it may be used to perform an Auxiliary Output function.</p> DISABLE INPUT 1 INPUT 2 PV (Process Variable) DEVIATION OUTPUT SETPOINT LOCAL SETPOINT REMOTE INPUT ALGORITHM 1
LOW VAL	Low Scale Value within the range of the selected variable to represent the minimum output (0 or 4 mA)	<p>CURRENT OUTPUT LOW SCALING FACTOR— Used only when CUR OUT is any selection other than DISABLE. This is a value in engineering units used to represent all CUR OUT parameters except Output.</p> <p>For Output, this is a value in percent and can be any value between -5 % and +105 %. However, keep in mind that relay output types can only be scaled 0 % to 100 %.</p>
HIGH VAL	High Scale Value within the range of the selected variable to represent the maximum output (20 mA)	<p>CURRENT OUTPUT HIGH SCALING FACTOR— Used only when CUR OUT is any selection other than DISABLE. This is a value in engineering units used to represent all CUR OUT parameters except Output.</p> <p>For Output, this is a value in percent and can be any value between -5 % and +105 %. However, keep in mind that relay output types can only be scaled 0 % to 100 %.</p>
CO RANGE	4-20mA 0-20mA	<p>CURRENT OUTPUT RANGE allows the user to easily select 4-20 mA output or 0-20 mA output operation without the need for recalibration of the instrument.</p> <p>ATTENTION Changing the Current Output Range will result in the loss of Field Calibration values and will restore Factory Calibration values.</p>