

Addendum To UDC2300 Controller Product Manual Position Proportional Control Model #DC230P-EE-2X-X1-XXXXXXX-XX Model #DC230P-AA-2X-X1-XXXXXXX-XX

Introduction

Function

Position Proportional Control positions a reversible motor with a feedback slidewire in proportion to the output of the control algorithm. Requires two output relays, auxiliary output and the second output.

Configuration

Refer to TUNING Set Up Group (Numeric Code 200) Function Prompts and select “NONE” under Function Prompt “LOCK”.

Prompt		Description	Selection or Range of Setting		Factory Setting
English	Numeric Code		Numeric Code	English	
LOCK	211	Lockout	0	NONE	CAL
			1	CAL	
			2	CONF	
			3	VIEW	
			4	ALL	

Refer to ALGOR Set Up Group (Numeric Code 500) Function Prompts and select “POSP” under Function Prompt “ALGOR”.

Prompt		Description	Selection or Range of Setting		Factory Setting
English	Numeric Code		Numeric Code	English	
OUTALG	502	Output Algorithm	0	RLY (Time simplex Relay 1)	depends on model
			1	RLY2 (Time simplex Relay 2)	
			2	CUR (Current simplex)	
			3	POSP (Position Proportioning) or TPSC (3 Position step)	
			4	RLYD (Time duplex)	
			5	CURD (Current duplex)	
			6	CURT (Current/time duplex)	
			7	TCUR (Time/current duplex)	

Wiring

Introduction

The figure below shows the Output wiring connections for models with Position Proportional Output. For Control and Alarm Relay Contact information, see subsection 2.4 in the manual.

Preliminary checks

- You must have either Solid State or Electromechanical relays in both sockets.
- You must have Auxiliary Output Option Printed Wiring Board installed.
- You must have Input 2.

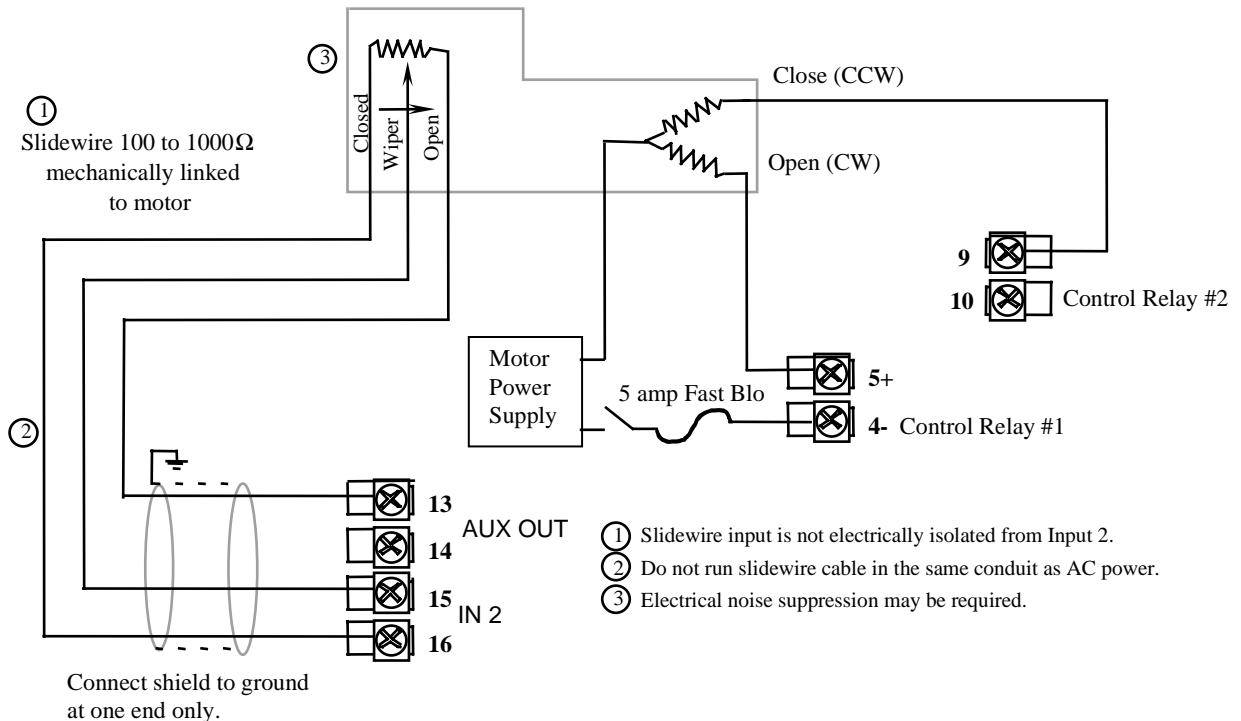
Jumper Positions

Figure 2-2 in the manual shows the location of the jumper and position selections.

Control Relay 1 – W101 is the jumper for **CONTROL RELAY #1**. Set the jumper to N.O. (Normally Open).

Control Relay 2 – W202 is the jumper for **CONTROL RELAY #2** for Duplex Output, Position Proportional output, or 3 position step control. Set the jumper to N.O. (Normally Open).

Check the internal jumper for INPUT2 to make sure it is set for the correct input type. The jumper is located at position S201 on the printed wiring board. Set the jumper to Volts (position #2).



Input 2 Set Up Group



ATTENTION

Prompts for Input 2 are not displayed when Control Algorithm is configured for PIDA, PIDB or PDMR and Output Algorithm is configured for Position Proportional. When Input 2 is selected for Slidewire it is dedicated for use as a motor slidewire voltage measurement. Therefore, Input2 should not be configured as a selection for any other parameter (for example, RSP SOURCE, AUX OUTPUT, ALARM).

Control Group

The prompt SWFAIL was added to the Control Set Up group.

Prompt		Description	Selection or Range of Setting		Factory Setting
English	Numeric Code		Numeric Code	English	
SWFAIL	816	When the Control Algorithm is configured for PDMR and the Output Algorithm is configured for Position Proportional, this is the position the motor will go to when the slidewire fails. Note: PWROUT must be configured for FSAF.		PDMR/Position Proportional motor position when slidewire fails	100
			0	0 (Closed position)	
			1	100 (Open position)	



ATTENTION

The Control Group prompt PWROUT appears when:

- Control Algorithm is selected for TPSC.
- Control Algorithm is selected for PDMR and Output Algorithm is selected for Position Proportional.

Calibration

Introduction

Position Proportional Output models must have the output calibrated after installation to ensure that the displayed output (slidewire position) agrees with the actual final control element position. Calibrate the controller so that the increase and decrease relays operate properly with respect to the position of the external feedback slidewire.

Connections

Apply power and allow the controller to warm up 30 minutes before you calibrate.

Procedure

The procedure for calibrating the Position Proportional Output is listed in the table below.

Make sure “LOCKOUT” in the Tuning Set Up group is set to “NONE”. See Section 4-Configuration in the product manual.

The numeric codes are listed in parentheses.

Step	Description	Press	Action
1	Enter Calibration Mode	SET UP	Until you see: <i>Upper Display</i> CAL (_ _ _ _) <i>Lower Display</i> POS PR (40000)
2	Set Motor Traverse Time NOTE: This is the time it takes the motor to travel from 0 to 100%.	FUNCTION ▲ or ▼	Until you see: <i>Upper Display</i> a value <i>Lower Display</i> MTR TI (40001) until the proper motor stroke time is reached (see the motor specs or measure the time) Range of setting = 5 to 1800 Seconds
3	Select Automatic or Manual Calibration	FUNCTION	Until you see: <i>Upper Display</i> DIS (0) <i>Lower Display</i> POS PR (40002) You can calibrate the controller output manually or let the controller calibrate the output automatically. If the slidewire has never been calibrated, you must use “AUTO” first. In the “Automatic Calibration Mode” (AUTO), the controller relays automatically move the motor in the proper direction. If desired, however, the motor may be manually positioned to 0 % and 100 % positions. Disconnect the relay wires and do MAN. In the “Manual Calibration Mode” (MAN), the motor does not move. Instead, the existing 0% and 100 % values may be changed with the ▲ or ▼ key.

Step	Description	Press	Action						
		▲ or ▼	To select automatic or manual calibration. <i>Upper Display</i> AUTO (1) or MAN (2) <i>Lower Display</i> POS PR (40002)						
			<table border="1"> <thead> <tr> <th>If you select...</th> <th>Then...</th> </tr> </thead> <tbody> <tr> <td>DO AUTO</td> <td>go to Step 4</td> </tr> <tr> <td>DO MAN</td> <td>go to Step 6</td> </tr> </tbody> </table>	If you select...	Then...	DO AUTO	go to Step 4	DO MAN	go to Step 6
If you select...	Then...								
DO AUTO	go to Step 4								
DO MAN	go to Step 6								
4	AUTO (1) Set 100 % value	FUNCTION	Note: When calibration is terminated, this selection reverts to DIS. The increment relay is turned on to move the motor to 100% position. <i>Upper Display</i> Counts of feedback slidewire (0 to 4000) <i>Lower Display</i> WAIT (40003) then <i>Lower Display</i> SPN VAL (40004) When the motor stops, the display should stop counting, then, go to the next step.						
5	Set 0 % value	FUNCTION	The decrement relay is turned on to move the motor to 0% position. <i>Upper Display</i> Counts of feedback slidewire (0 to 4000) <i>Lower Display</i> WAIT (40003) then <i>Lower Display</i> ZRO VAL (40005) When the motor stops, the display should stop counting, then go to the next step. Note: The controller may automatically recalibrate the span value a second time.						
6	MAN (2) Set 100 % value	FUNCTION	You will see: <i>Upper Display</i> The existing span calibration value in counts <i>Lower Display</i> SPN VAL (40004) ▲ or ▼ Until the desired span value is reached in the upper display. <i>Upper Display</i> The desired span value <i>Lower Display</i> SPN VAL (40004)						
7	Set 0 % value	FUNCTION	The controller will store the 100% value and you will see: <i>Upper Display</i> The existing zero calibration value in counts <i>Lower Display</i> ZRO VAL (40005) ▲ or ▼ Until the desired zero value is reached in the upper display. <i>Upper Display</i> The desired zero value <i>Lower Display</i> ZRO VAL (40005)						

Step	Description	Press	Action
8	Exit the Calibration Mode	FUNCTION DISPLAY or SETUP	The controller will store the 0% value. FAILED (40006) To exit the calibration mode.

Troubleshooting



WARNING—SHOCK HAZARD



TROUBLESHOOTING MAY REQUIRE ACCESS TO HAZARDOUS LIVE CIRCUITS, AND SHOULD ONLY BE PERFORMED BY QUALIFIED SERVICE PERSONNEL. MORE THAN ONE SWITCH MAY BE REQUIRED TO DE-ENERGIZE UNIT BEFORE SERVICING.

Step	What to do	How to do it
1	Make sure the controller is configured for Position Proportional output.	Make Output Algorithm Set Up group function prompt OUT ALG = POSN. Refer to <i>Configuration</i> .
2	Check the field wiring.	Refer to <i>Installation</i> for Position Proportional Wiring information.
3	Check the output.	Put the controller into Manual mode and change the output from 0 % to 100 %.
4	Check whether the motor drives in both directions. If it does go to Step 6.	See the Position Proportional calibration procedure for motor slidewire calibration.
5	Check whether the motor drives in either direction. If the motor drives in one direction, check the slidewire. If the motor does not drive in either direction, check the motor.	Refer to the motor instructions.
6	Check the output voltage to the slidewire.	Should equal from 1.3 volts to 1.0 volts. See wiring in the installation section for terminal designations. The feedback slidewire output voltage must vary with the valve position.
7	Make sure the output relays are actuating properly.	Put the controller into Manual mode. Vary the output above and below the present value. Observe "OUT" indicator on the operator interface. If they are not working properly, check the field wiring, then go to Step 5. If they are, go to Step 8.
8	Recalibrate the controller.	Refer to <i>Calibration</i> .

Warranty/Remedy

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