*STT04EB_*
Smart Transmitter Terminal

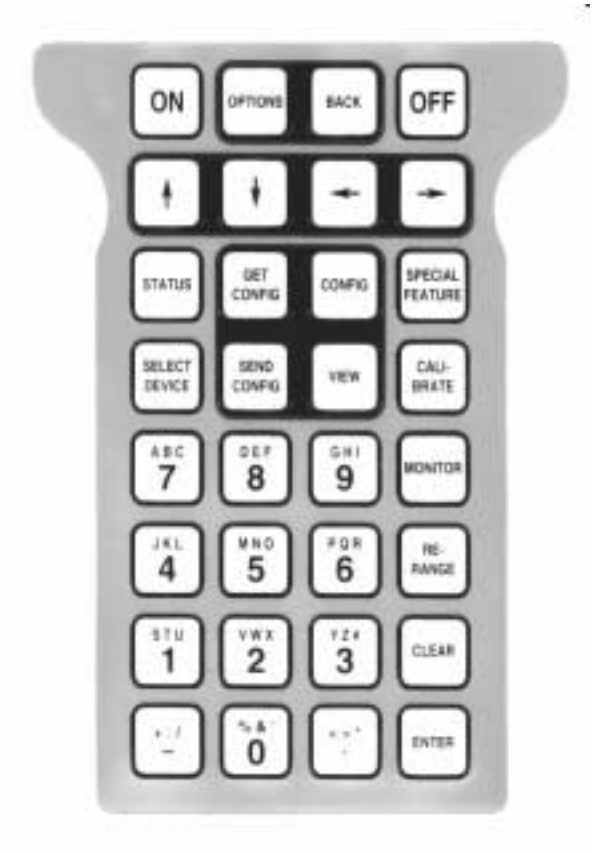
ADDENDUM

INTRODUCTION

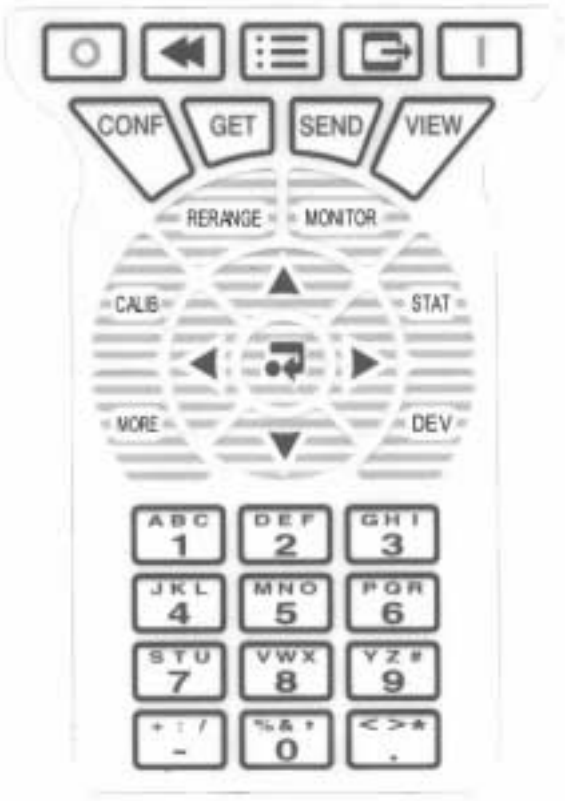
This addendum supplements information contained in the WPBEEUI110502B0 STT04 Product Instruction. The purpose of this addendum is to "map" or corellate function keys on the **revised STT04EBO** keypad to the **original STT04** keypad function keys that are documented in the Product Instruction. This addendum also provides supplemental 600TEN Transmitter information which is not contained in the existing STT04 Product Instruction. Refer to the STT04 Product Instruction for specific operating details.

OPERATOR/INTERFACE CONTROLS

The illustrations below show the comparison between the old and new STT04 keypads:



Old Keypad



New Keypad

PN24969

ABB Instrumentation

Table 1 provides a comparison of old-keypad vs. new-keypad functions for the keys on the STT04 terminal.

NOTE: The configure, view, select device and options keys function without a field device connected to the STT04 terminal. The other functions are locked out until a field device is connected to the terminal.

Table 1. Keypad Functions

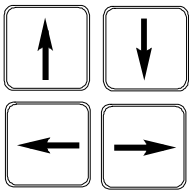
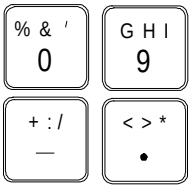
Old Key	New Key	Function
		Powers the unit up and displays the STT04 firmware revision level.
		Turns power off. Stored configurations remain in internal memory. The terminal will shut itself off after 15 minutes of idle operation.
		Scrolls through menus and selects functions.
		Inputs values into the terminal. Includes digits 0 through 9, ASCII characters A through Z, signs, and punctuation.
		Completes an input or a selection.
		1. Inputs a new configuration into the STT04 internal memory. 2. Modifies an existing configuration. 3. Erases an existing configuration from the terminal memory.
		Retrieves, views and optionally saves the configuration of the selected field device.
		Sends a configuration from the STT04 terminal to a selected field device.
		Steps through various calibration procedures (dependent on the selected field device).
		Monitors primary input or output, secondary output, ambient temperature of the selected field device, and other variables.

Table 1. Keypad Functions(continued)

Old Key	New Key	Function
STATUS		Displays field device status based on results of continuous self-diagnostics.
RE-RANGE		1. Changes engineering units. 2. Sets lower and upper range values of primary and secondary units. 3. Changes the output dampening.
SPECIAL FEATURE		1. Sets output to a fixed value. 2. Cancels a fixed output. 3. Sets up LCD - select display units to be displayed on the field device LCD. 4. Changes device configuration to the standard configuration (PTS only). NOTE: For special feature functions for the Type AVS Smart Positioner, refer to Appendix A.
CLEAR		Escapes the current function and returns the display to the *READY* condition.
SELECT DEVICE		Selects and changes working configurations and field devices (if connected).
VIEW		Steps through the selections of the working configuration. Views a configuration, but does not allow modifications to be made.
OPTIONS		1. Sets the language of the display screens. 2. Sets the communication format. 3. Displays the amount of charge left on the battery pack. 4. Displays the STT04 name.
BACK		Returns to a previous screen during configuration, calibration, rerange, etc.

APPENDIX - 600T & 600TEN PRESSURE TRANSMITTER

INTRODUCTION

This appendix covers the configuration and calibration functions of the Type 600T EN Pressure Transmitter. Refer to SECTION 4 - OPERATING PROCEDURES for information on the following functions:

- Send configurations.
- Get configurations.
- View configurations.
- Select configurations.
- Erase configurations.
- Operational functions.

CREATE/MODIFY CONFIGURATION

A configuration can be created off-line, without a connected field device. Refer to Figure 1 for an overview of the configuration function. The following table details the configuration process.

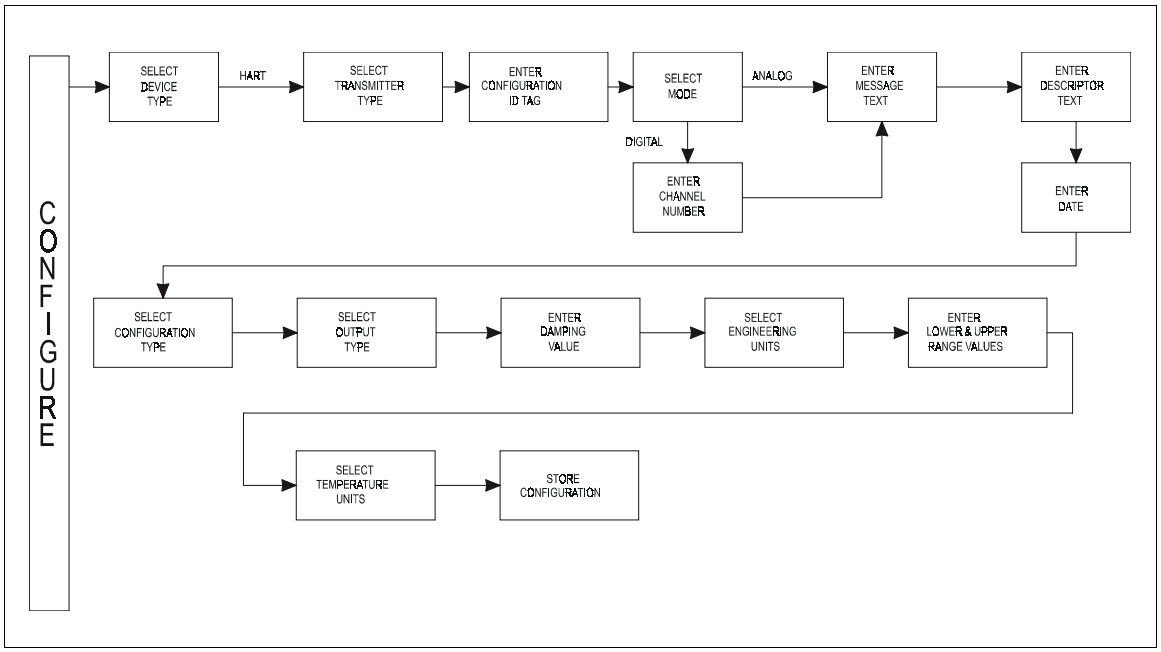


Figure 1. Configuration Flowchart (600T & 600T EN)

Key	Display	Comments
CONFIG ENTER	CONFIGURATION → NEW MODIFY ERASE	Select *NEW* to create a configuration. To modify an existing configuration, select *MODIFY*. The screen sequence is the same, however, the *MODIFY* screens will appear with the values and arrow positions as they were originally configured.
↓ ENTER	DEVICE TYPE BAILEY FSK → HART	Select *HART*.
↓ [6 TIMES] → ENTER	TRANSMITTER TYPE PTH EBTH TB82 pH TB82 ORP TB82 pION TB82 CONC TZID/AXH AS800 TEU211 TS11/TS01 50XE4000 50XM2000 50SM'1000 →600T HART UNIV	Select *600T*.
ENTER	STT04 CONFIGURATION [ ] ←PREVIOUS NEXT→	Enter a name for the configuration ID tag using up to eight ASCII characters. To select a character, press the key that has the desired character. Continue to press the key until the desired character appears. Use the right arrow key to move to the next character. Use the left arrow key to go back to the previous character.
ENTER	SELECT MODE: → ANALOG DIGITAL	Select *ANALOG.* NOTE: *The DIGITAL* selection should only be made when using an IMFBS01 field bus I/O module. A *CHANNEL #* prompt appears when *DIGITAL* is selected.

Key	Display	Comments
ENTER	MESSAGE: ←PREVIOUS NEXT→	Type a descriptive message using up to 32 characters. This field can be used to note anything of importance to the device or installation. To select a character, press the key that has the desired character. Continue to press the key until the desired character appears. Use the right arrow key to move to the next character. Use the left arrow key to go back to the previous character.
ENTER	DESCRIPTOR: ←PREVIOUS NEXT→	Type a descriptor string using up to 16 characters. This field can be used for notations about the device or process. To select a character, press the key that has the desired character. Continue to press the key until the desired character appears. Use the right arrow key to move to the next character. Use the left arrow key to go back to the previous character.
ENTER	DATE: DAY: nn MONTH: nn YEAR: nn	Enter a day and press **ENTER**. Enter a month and press **ENTER**. Enter a year and press **ENTER**. This date can represent the creation date of the configuration, the date the device or element was installed, or some other significant date.
↓ ENTER	CONFIG TYPE 600T → 600T EN	Select *600T EN*
ENTER	OUTPUT TYPE → LINEAR SQU (x) SQR (x^3) SQR (x^5) 5th ORD. POLY DOUBLE POLYN	Select *LINEAR*. **NOTE:** Other output type selections are: *SQUARE ROOT* *SQR (x^3)* *SQR (x^5)* *5th ORDER POLYNOMIAL* *DOUBLE POLYN* Use **BACK** to return to a previous configuration screen from any screen in the configuration process.
ENTER	DAMPING: (0 - 16 SEC) 0.5 SECS	Enter a value between 0 and 16 seconds.

Key	Display	Comments
ENTER	ENGINEERING UNIT → iH20-20c iHg-0°c ftH2O-20c mmH20-20c	Select an engineering unit best suited for the application. Other units not shown include *mmHg-0°C, PSI, BARS, mBAR, gSqCm, Kgcm2, PA, KPA, torr-0°C, ATM, MPa, iH2O-4°C, mmH2O-4°C*.
ENTER	LOWER RANGE VAL nn.nn UNITS UPPER RANGE VAL nn.nn UNITS	Input lower range value using the number keys, then press **ENTER**. Input the upper range value, then press **ENTER**.
ENTER	TEMPERATURE UNITS → °C °F °R °K	Select the 600T EN *TEMPERATURE UNITS.* Use arrow key to select option, then press **ENTER**.
↓	STORE THIS CONFIGURATION? NO → YES	Select *YES*.
ENTER		
ENTER	ID TAGNAME READY	

CALIBRATION

This section details the 600T EN pressure transmitter calibration functions using an STT04 terminal. There are four types of calibration functions:

- Sensor Trim
- D-to-A adjust (Analog Mode only)
- PV Bias
- Set Output %

Refer to Figure 2 for an overview of the calibration functions.

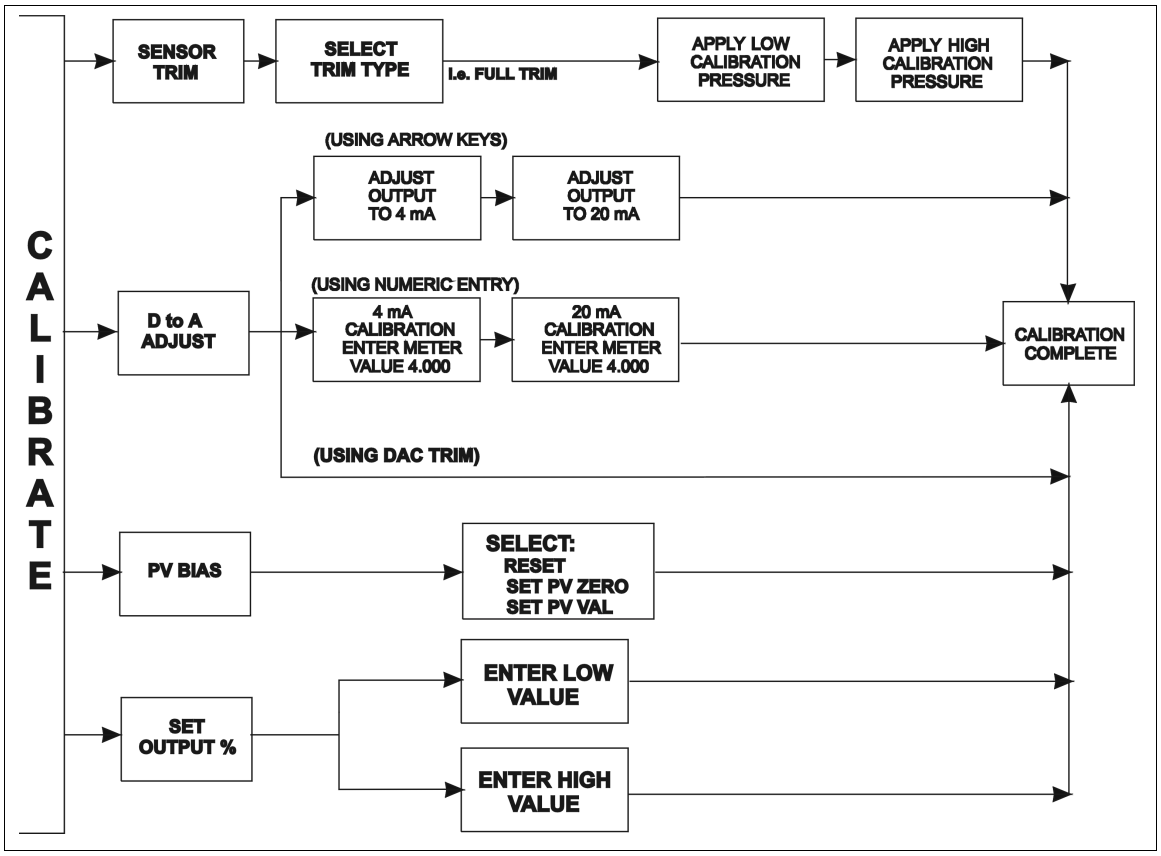


Figure 2. Calibration Flowchart (600T EN)

Sensor Trim

This procedure allows calibration of the pressure sensors for 600T EN pressure transmitters. Selections available are FULL TRIM, ZERO TRIM, FACTORY TRIM and STATIC TRIM.

FULL TRIM

Use this option if both LOW (min.) and HIGH (max.) pressure settings are to be calibrated.

Key	Display	Comments
CALI-BRATE	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.
↓		
ENTER		
ENTER	→ SENSOR TRIM D-TO-A ADJUST PV BIAS SET OUTPUT %	Select *SENSOR TRIM*, or select calibration option with down-arrow key and refer to the appropriate section. Press **ENTER** when done.
ENTER	→ FULL TRIM ZERO TRIM FACTORY TRIM STATIC TRIM	Select *FULL TRIM*.
ENTER	LOW CALIB PRESSURE nn.nn UNITS HIGH CALIB PRESSURE nn.nn UNITS	Enter the low calibration pressure value using the number keys and press **ENTER**. Similarly, enter the high calibration pressure value, then press **ENTER**.
ENTER	APPLY PRESSURE OF nn.nn UNITS THEN HIT ENTER	Apply the low calibration pressure to the input of transmitter as specified earlier.
ENTER	APPLY PRESSURE OF nn.nn UNITS THEN HIT ENTER	Apply the high calibration pressure to the input of transmitter as specified earlier.

ZERO TRIM

Use this option if only the LOW (min.) pressure setting is to be calibrated

Key	Display	Comments
CALI-BRATE	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.
↓		
ENTER		
ENTER	→ SENSOR TRIM D-TO-A ADJUST PV BIAS SET OUTPUT %	Select *SENSOR TRIM*, or select calibration option with down-arrow key and refer to the appropriate section. Press **ENTER** when done.
↓	FULL TRIM → ZERO TRIM FACTORY TRIM STATIC TRIM	Select *ZERO TRIM*.
ENTER		
ENTER	APPLY 0 INPUT TO SENSOR THEN HIT ENTER	Apply the pressure equal to the zero value of the instrument and press **ENTER**.
ENTER	APPLIED ZERO INPUT: *value* units PRESS ENTER TO CONTINUE	The instrument reads the pressure applied and displays its value. Press **ENTER**.
ENTER	ID TAGNAME READY	

FACTORY TRIM

Use this option if factory setting is to be used for calibration.

Key	Display	Comments
CALI-BRATE	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.
↓		
ENTER		
ENTER	→ SENSOR TRIM D-TO-A ADJUST PV BIAS SET OUTPUT %	Select *SENSOR TRIM*, or select calibration option with down-arrow key and refer to the appropriate section. Press **ENTER** when done.
↓	FULL TRIM ZERO TRIM → FACTORY TRIM STATIC TRIM	Select *FACTORY TRIM*.
↓		
ENTER		
ENTER	ID TAGNAME READY	

STATIC TRIM

Use this option if the instrument is to be statically calibrated using a known pressure.

Key	Display	Comments
CALI-BRATE	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.
↓		
ENTER		
ENTER	→ SENSOR TRIM D-TO-A ADJUST PV BIAS SET OUTPUT %	Select *SENSOR TRIM*, or select calibration option with down-arrow key and refer to the appropriate section. Press **ENTER** when done.
↓ [3 TIMES]	FULL TRIM ZERO TRIM FACTORY TRIM → STATIC TRIM	Select *STATIC TRIM*.
ENTER		
ENTER	STATIC PRESSURE *value* units PRESS ENTER TO MODIFY	Display shows the value of the pressure measured by the 600T EN transmitter.
ENTER	STATIC PRESSURE *value* units	Enter the value of the actual static pressure using the number keys.
ENTER	ID TAGNAME READY	

D-to-A Adjust

The *D-TO-A ADJUST* selection is only present when you are in the *ANALOG* communication mode. There are three methods available to adjust the four to 20 milliampere output:

- Up/Down Arrow keys.
- Meter value entry for HART devices.
- Factory DAC Trim

ARROW KEY ADJUSTMENT

Use this function to adjust the 4 to 20 milliampere output of the field device using the up and down arrow keys.

Key	Display	Comments
CALI-BRATE ↓	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.
↓ ENTER	CALIBRATION SENSOR TRIM → D-TO-A ADJUST PV BIAS SET OUTPUT %	Select *D-TO-A ADJUST*.
↑ ENTER	D/A CAL USING → UPDOWN ARROW KEYS METER VALUE ENTRY FACTORY DAC TRIM	Select *UPDOWN ARROW KEYS*.
ENTER	ADJUST TO 4 mA THEN HIT ENTER	Use the arrow keys to adjust the 4 mA signal. NOTE: When increasing or decreasing the mA signal, the increments of change increase with successive depressions until the maximum level of change is reached. By changing direction you will return to the smallest increment of change. This adjustment technique speeds up the adjustment process without affecting fine adjustment.

Key	Display	Comments
ENTER	ADJUST TO 20 mA THEN HIT ENTER	Use the arrow keys to adjust the 20 mA signal.
ENTER	ID TAGNAME READY	

METER VALUE ADJUSTMENT

Use this function to adjust the four to 20 milliampere output of the field device using values from an external current meter. This method is only valid for HART devices.

Key	Display	Comments
CALI-BRATE	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.
↓		
ENTER		
↓	CALIBRATION SENSOR TRIM → D-TO-A ADJUST PV BIAS SET OUTPUT %	Select *D-TO-A ADJUST*.
ENTER		
ENTER	D/A CAL USING UPDOWN ARROW KEYS → METER VALUE ENTRY FACTORY DAC TRIM	Select *METER VALUE ENTRY*.

Key	Display	Comments
ENTER	4 mA CALIBRATION: ENTER METER VALUE n.nnnn	Use the number keys to enter the current meter reading.
ENTER	20 mA CALIBRATION: ENTER METER VALUE nn.nnnn	Use the number keys to enter the current meter reading.
ENTER	ID TAGNAME READY	

PV Bias

The PV Bias calibration procedure allows you to align the "zero" of the process with the "zero" reading of the transmitter. This may be done in one of two ways:

- Apply a pressure that corresponds to the desired zero offset or bias [SET PV ZERO]
- To scale to a value different from zero, calculate the offset or biasand apply it to the 600T EN [SET PV VAL]

Key	Display	Comments
CALI-BRATE ↓ ENTER	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.

Key	Display	Comments
	CALIBRATION SENSOR TRIM D-TO-A ADJUST → PV BIAS SET OUTPUT %	Select *PV BIAS*. If digitally configured, the *D-TO-A ADJUST* selection will not appear.
		
		
	PV BIAS → RESET SET PV ZERO SET PV VAL	Use the arrow keys to scroll to the desired PV BIAS parameter. RESET removes any previously configured bias values. The following procedure is used to establish the zero offset for SET PV ZERO, the procedure for SET PV VAL is similar.
	PV BIAS RESET → SET PV ZERO SET PV VAL	Apply the desired zero pressure value to the transmitter. Scroll to SET PV ZERO using the down arrow key and press **ENTER**.
		
	PV VALUE READ: *value* units PRESS ENTER TO SET PV ZERO	Pressing **ENTER** calibrates the PV ZERO value.
	ID TAGNAME READY	*SET PV ZERO* is complete.

Set Outputt

Key	Display	Comments
CALI-BRATE	OUTPUT WILL BE AFFECTED! PROCEED? NO → YES	This operation will cause a change in output not corresponding to the input. Be sure the control loop is in manual. Select *YES*.
↓		
ENTER		
↓ [3 TIMES]	CALIBRATION SENSOR TRIM D-TO-A ADJUST PV BIAS → SET OUTPUT %	Select *SET OUTPUT* %. If digitally configured, the *D-TO-A ADJUST* selection will not appear.
ENTER		
ENTER	SET OUTPUT % → LOW HIGH	Select LOW and press **ENTER**. (Procedure for HIGH selection is identical).
ENTER	OP %: nnn.nn % PV VAL: *value* units Hit ENTER to set OP%	Display indicates present data.
ENTER	ENTER NEW VALUE *value* %	Enter LOW value, **ENTER**.
ENTER	ID TAGNAME READY	

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