

## Digital EPIC D460/D470 For Rotary, Linear and S.I.S. Applications Operating Manual

### 1. Manual Scope

This manual contains installation, wiring, configurations, calibration and P.S.T. instructions of the Digital EPIC D460/D470 in S.I.S. applications for both rotary and linear actuators. These transmitters are microprocessor-based devices, providing 4-20 mA signal for position feedback, partial stroke test capability for S.I.S. applications and digital communications via the HART<sup>®</sup> protocol for data evaluation and diagnostics.

### 2. Symbols Used in this Document



This symbol warns the user of possible danger. Failure to heed this warning may lead to personal injury or death and/or severe damage to equipment.



This symbol identifies information about operating the equipment in a particular manner that may damage it or result in a system failure. Failure to heed this warning can lead to total failure of the equipment or any other connected equipment.



This symbol draws attention to information that is essential for understanding the operation and/or features of the equipment.

### 3. D-Epic Mounting Instructions

#### 3.1 Mounting D-EPIC on a Rotary Actuator Instructions

Press fit the inner beacon to the inner beacon coupler. The inner beacon needs to be properly oriented. Use the symbols on the top of the inner beacon to orient correctly during installation as shown in Condition 1 or Condition 2 (See Figures 1 and 2 below).

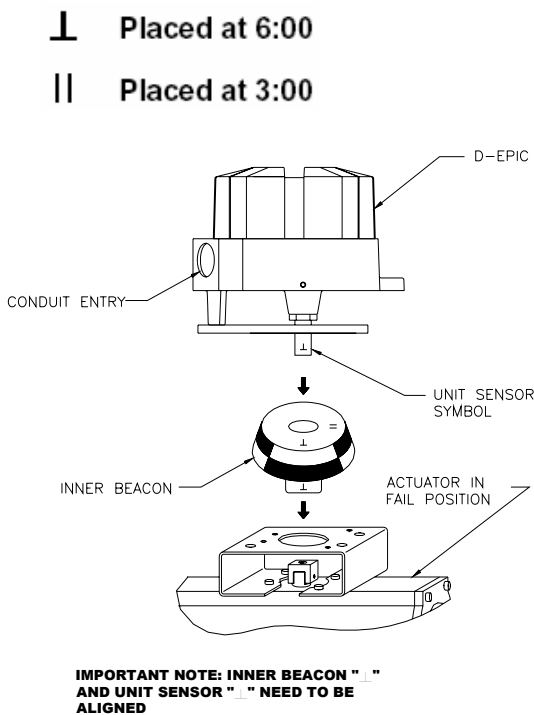


Note

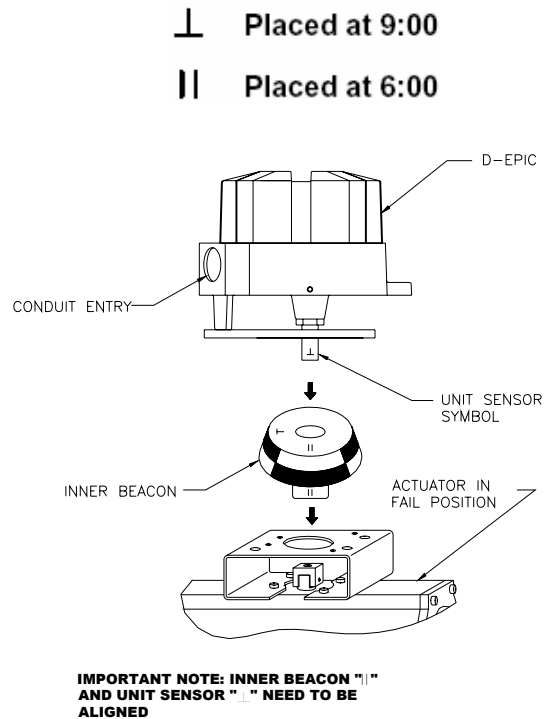
**IMPORTANT: Condition 1 and Condition 2 show the placement of the inner beacon with respect to the positioner housing while the actuator is in the fail position.**

**Condition 1**-Actuator fails in a clockwise direction.

**Condition 2**-Actuator fails in a counter clockwise direction.



**Figure 1**



**Figure 2**

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## 3.2 Mounting the DEPIC on a Linear Actuator Instructions

### 3.2.1 To Center the DEPIC:

- 3.2.1.1 Stroke the actuator to its upper limit and place a mark on the actuator's yoke that lines up with the red arrow on the magnet assembly.
- 3.2.1.2 Stroke the actuator to its lower limit and place a mark on the actuator's yoke that lines up with the red arrow on the magnet assembly.
- 3.2.1.3 Place a third mark on the yoke centered between the upper and lower limit marks.
- 3.2.1.4 Place Lastly, mount the DEPIC to the bracket so that the conduit entry (@ 9:00) faces away from the diaphragm or cylinder (@ 12:00).

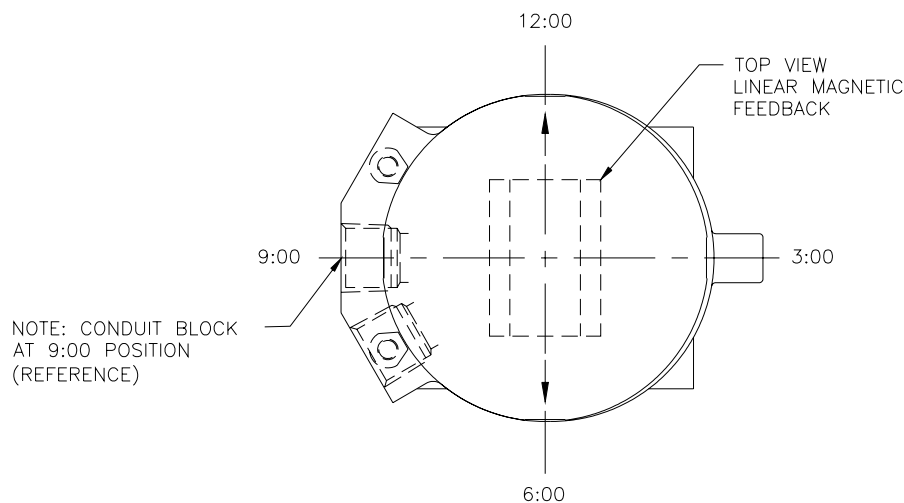


Figure 3



NOTE: For Fisher actuators model 657 & 667 sizes 34 thru 70, Westlock Controls supplies a slotted mounting kit, to ease the mounting process. This will allow the user to easily center the positioner sensor between the limits of the magnet assembly's stroke.

Note

## 4. D-EPIC Wiring Instructions



**All wiring must be in accordance with National Electrical Code (ANSI-NFPA-70) for the appropriate area classifications.**



**Attention**

All wiring must be in accordance with National Electrical Code (ANSI-NFPA-70) for area classifications. The valve monitors are approved for Class I, Division 1, Groups B, C and D; Aex dII B + H<sub>2</sub>; Class I, Division 2, Groups A, B, C and D and AEx nA (zone 2) Enclosure Type 4 IP67.



**Always check the nameplate to make sure the agency approval ratings coincide with the application.**



**Note**

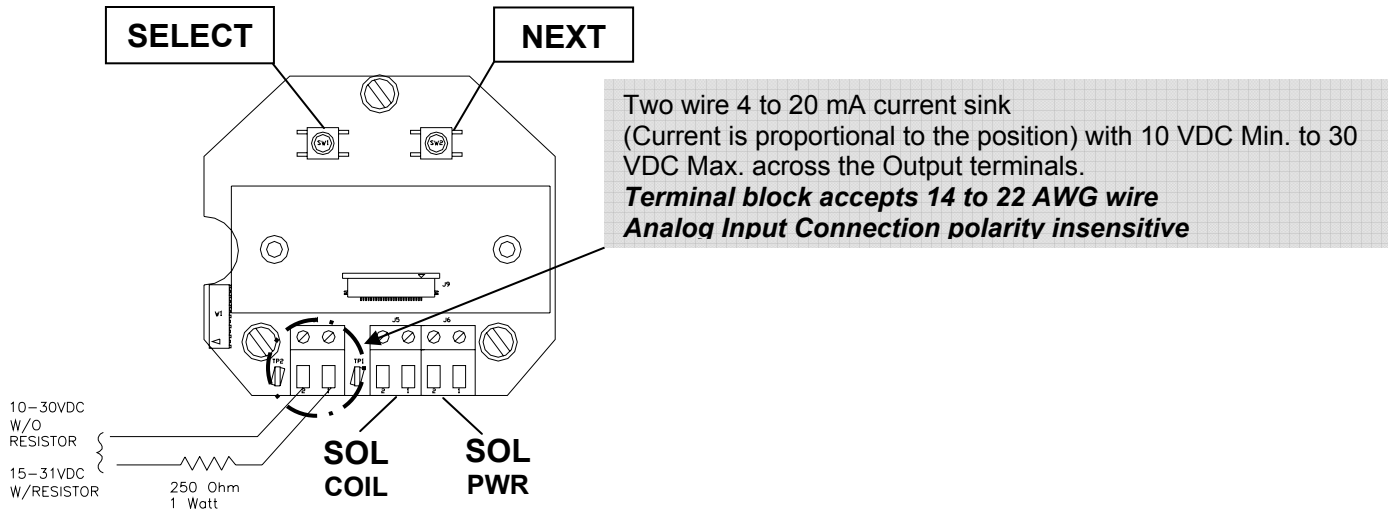
The proper wiring diagram for your unit is shown on the inside of the enclosure cover.



Confirm that the area is known to be non-hazardous before opening the cover of a network monitor and making or breaking any electrical connections.

Remove Cover and terminate twisted shielded cable to terminal J1. Terminate the solenoid valve terminal lines to terminal J5 as shown in Figure 4.

**Figure 4**



For Hart Applications the auxiliary resistance is necessary only if unit is energized without an Analog input card or with any device with negligible impedance. Hart hand held needs to be connected down stream of the optional resistance.

## 5. D-EPIC Configuration Instructions

The Configuration (Cofg) Menu has four or eight parameter menus depending upon the Partial Stroke Test (PST) enable/disable parameter setting. 'Cofg' is displayed in LCD upper right side. The following sections describe each. Each of the following selections will appear in LCD lower right side until selected where it then moves to LCD upper right side.

### 5.1 Type

This allows the user to select the valve type, rotary (Rot) or linear (Lin). The factory default is rotary. 'Type' appears in upper right side and the possible selections appear in LCD lower right side.

### 5.2 FLOP

This allows the user to select how the current valve position is displayed in LCD sector 1, either as percent open (OFF) or as percent closed (ON). The factory default is percent open (OFF). 'FLOP' appears in LCD upper right side and the possible selections appear in LCD lower right side.

## 5.3 ESD

This allows the user to enable (Enbl) or disable (Dsbl) ESD functionality (only when instrument ID is 4, see earlier section on Optional ESD/PST Functions). The factory default setting is disabled. 'ESD' appears in LCD upper right side and the possible selections appear in LCD lower right side.

## 5.4 PST

This allows the user to enable (Enbl) or disable (Dsbl) PST functionality. The factory default setting is disabled. 'PST' appears in LCD upper right side and the possible selections appear in LCD lower right side.

## 5.5 PSSP

This allows the user to select the Partial Stroke Set Point (PSSP). This menu is only available if PST is enabled. The PST set point is selectable in increments of 1% from 0-99%. The factory default is 75%. 'PSSP' appears in LCD upper right side and the selections appear in LCD lower right side.

## 5.6 PSER

This allows the user to select the Partial Stroke Error Alert Threshold (PSER). This menu is only available if PST is enabled. The PST error alert threshold is selectable in increments of 1% from 1-10%. The factory default is 2.0%. 'PSER' appears in LCD upper right side and the selections appear in LCD lower right side.

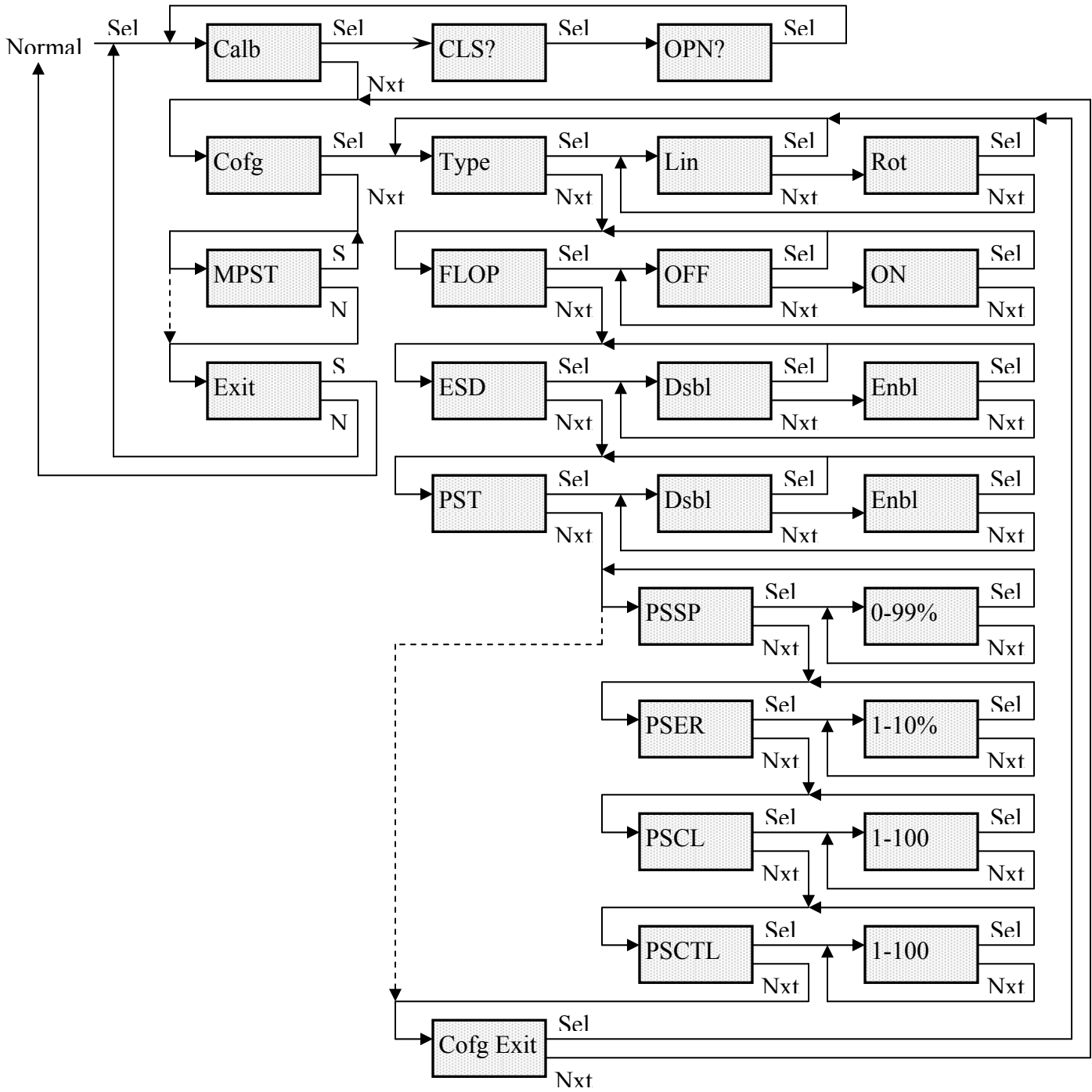
## 5.7 PSCL

This allows the user to select the Partial Stroke Cycle Limit (PSCL). This menu is only available if PST is enabled. The PST cycle limit is selectable in increments of 1 from 1-100, where each increment represents 100, yielding a range of 100-10000 cycles. The factory default is 1000 cycles. 'PSCL' appears in LCD upper right side and the selections appear in LCD lower right side.

## 5.8 PSCTL

This allows the user to select the Partial Stroke Cycle Time Limit (PSCTL). This menu is only available if PST is enabled. The PST cycle time limit is selectable in increments of 1 from 1-200, where each increment represents 100 milliseconds, yielding a range of 100-20000 msec or 0.1-20 seconds. The factory default is 5 seconds. 'PSCTL' appears in LCD upper right side and the selections appear in LCD lower right side. Follow the Keypad menu flow diagram.

## Keypad Menu Flow Diagram



Sel – Select Key  
 Nxt – Next Key

## 6. D-Epic Calibration Instruction

### 6.1 Pushbutton Procedure

Utilize the Select and Next pushbuttons on the PCB Assembly (Figure 5) in the enclosure to calibrate the D-EPIC.

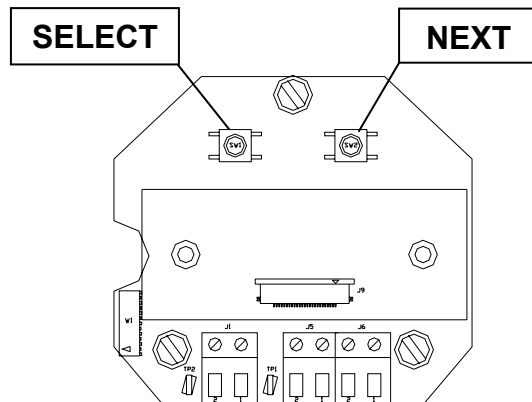


Figure 5

#### Quick Calibration:

**Note: Select Key = Red Button**  
**Next Key = Black Button**

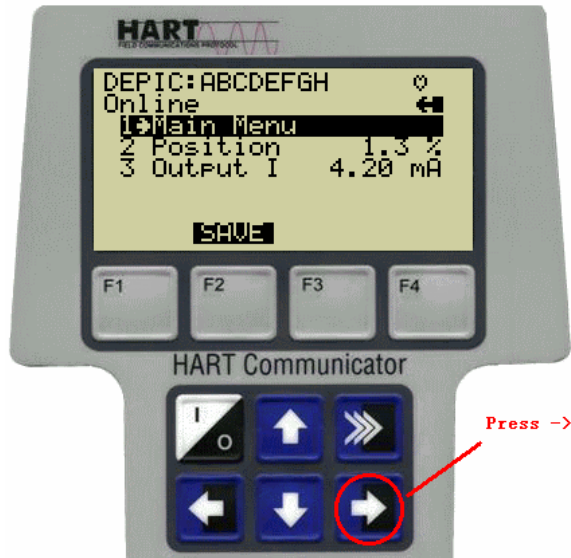
- 6.1.1 Press the select key until “Ma Calb” is displayed.
- 6.1.2 Press the select key until “CLS?” is displayed.
- 6.1.3 Stroke the valve to the de-energized position (Valve Closed).
- 6.1.4 Once the de-energized position (Valve Closed) is achieved press select to calibrate this position as the CLS (Closed) one.
- 6.1.5 Display shows “OPN?” as soon as the low Calibration is achieved.
- 6.1.6 Before pressing any keys, stroke the valve to the energized position (Valve Opened).
- 6.1.7 Once the energized position (Valve Opened) is achieved press select to calibrate this position as the OPN (Opened) one.
- 6.1.8 Display shows “Calb Pass” as soon as calibration is completed.
- 6.1.9 Then press the Next Key until “Exit” is displayed on the LCD.
- 6.1.10 Once exit is displayed press the Select Key to exit calibration.



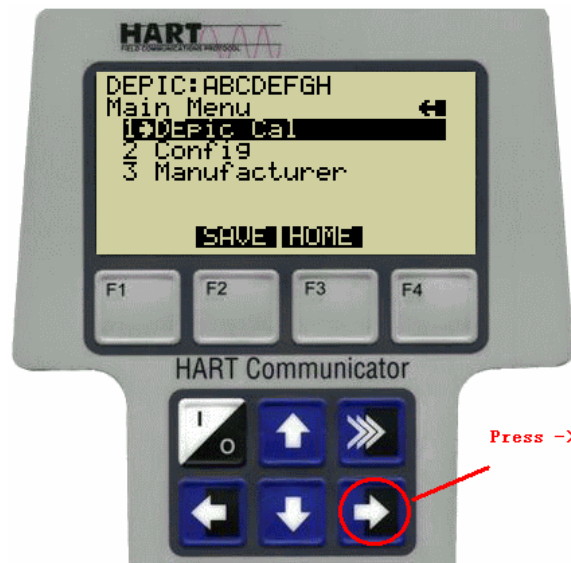
## 6.2 HART Rosemount 275 Procedure

6.2.1 Connect D-EPIC to HART Handheld 275.

6.2.2 Select Main Menu by pressing → Key.



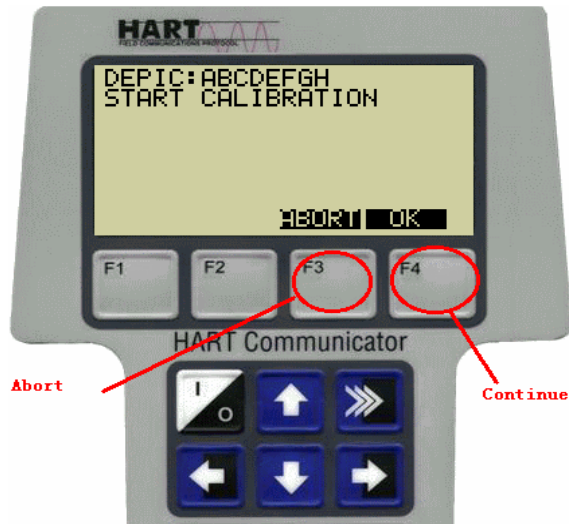
6.2.3 Select D-EPIC Cal by pressing → Key



## 6.2.4 Once D-EPIC selected.

6.2.4.1 Calibration process can be aborted by pressing F3 key.

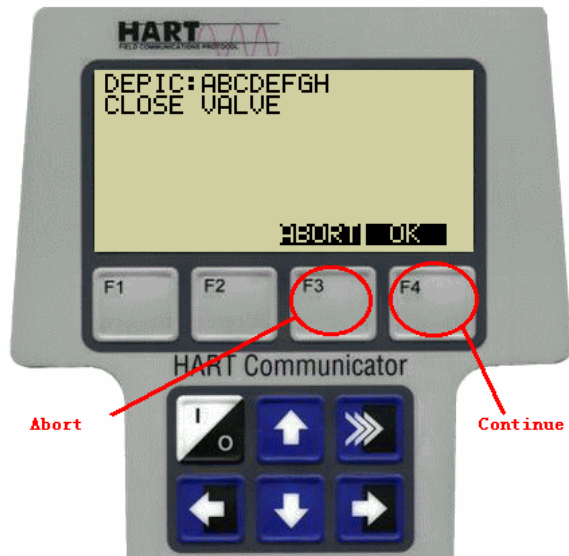
6.2.4.2 Calibration process can be continued by pressing F4 key.



## 6.2.5 First close the valve and wait until the valve fully reaches the closed position.

6.2.5.1 Calibration Process can be aborted by pressing F3 key.

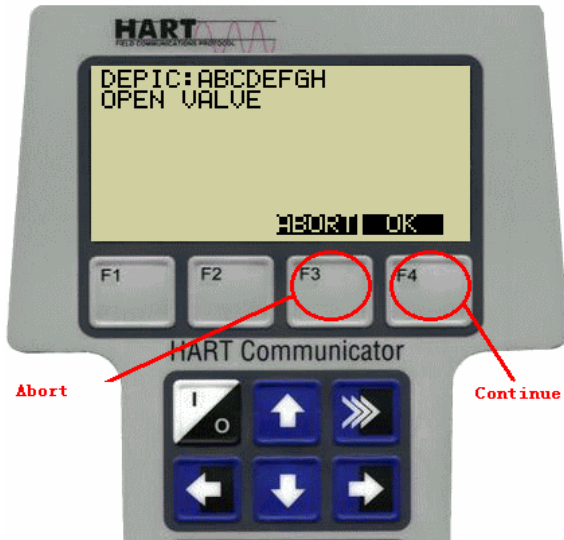
6.2.5.2 Calibration process can be continued by pressing F4 key.



## 6.2.6 Now open the valve and wait until the valve fully reaches the open position.

6.2.6.1 Calibration process can be aborted by pressing F3 key.

6.2.6.2 Calibration process can be continued by pressing F4 key.



## 6.2.7 Finish and except the new calibrated value.

6.2.7.1 To reject new calibrated value, and set back old value, select “ABORT ” by pressing F3 key.

6.2.7.2 To except new calibrated value, select “OK” by pressing F4 key.

**Note:** Wait 5 seconds before doing this Operation



6.2.8 Return to online menu to read current output values by pressing ← key once. This screen may view any calibration error flag.

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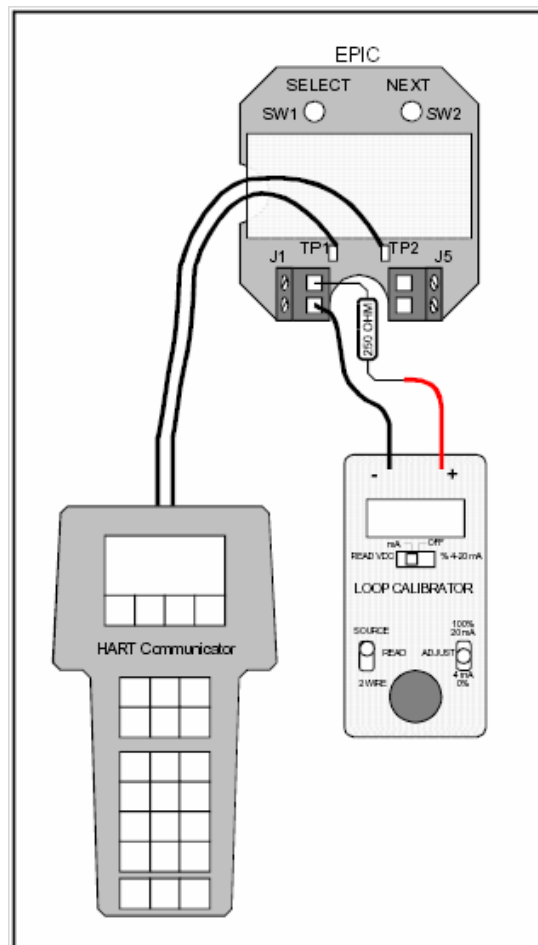
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## 6.3 Hart Rosemount 275 & ALTEC 334 loop Calibrator Procedure

- 6.3.1 Disconnect both input wires from the D-Epic transmitter.
- 6.3.2 On the ALTEK Loop Calibrator move the slide switch to the “mA” position, the left toggle switch to the “Source” position and the right toggle switch to the “Adjust” position. Short the output leads together then turn the adjustment knob until the display shows full-scale output (usually 24.0 mA).
- 6.3.3 Connect the black lead (-) to one pin of the D-EPIC transmitter input connector (J1). Connect the red lead (+) to a 250-Ohm 1/4W resistor. Connect the other end of the 250-Ohm resistor to other pin of the EPIC transmitter input connector (J1).
- 6.3.4 Connect the leads of the HART 275 Communicator to TP1 and TP2 of the D-EPIC transmitter.

**Note:**

The Loop calibrator does not control the D-Epic it only supplies current for it to operate. The D-EPIC will draw (sink) current in proportion to the valve position (usually 4.0 mA with the valve Closed and 20.0 mA with the valve current for the EPIC to operate. This is why the Loop Calibrator is set to 24.0 mA so that it can supply enough current for the EPIC to operate when the EPIC draws 20 mA.



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## 7 D-EPIC partial stroke instructions.

7.1 **Manual partial stroke test (MPST) selection will only be available if PST is enabled. This provides means for the user to activate + PST from the keypad. (refer to keypad menu flow diagram)**

### 7.2 Hart Partial Stroke Test via Rosemount 275HP

7.2.1 Connect D-EPIC to HART Hand Held 275.

7.2.2 Select Main Menu by pressing → Key on 1.



7.2.3 Select Partial Stroke by pressing → Key on 2.



7.2.4 Start Partial Stroke by pressing → Key on 1.



**7.2.5** Partial Stroke process can be continued by pressing F4 (OK) Key or can be aborted by pressing F3(Abort)Key.



**7.2.6** Once Partial Stroke has been started (9.5 F4 been selected) there will be a rapid sequence of the following screens:

- 7.2.6.1** Busy Partial Stroke; F3 to abort otherwise wait for next screen
- 7.2.6.2** Finish Partial Stroke; F3 to abort otherwise wait for next screen
- 7.2.6.3** Partial Stroke Success; F3 to abort otherwise wait for next screen
- 7.2.6.4** Finish Partial Stroke; F3 to abort or F4 to accept

**7.2.7** Once Partial Stroke has been successfully achieved and accepted (9.6.1 F4 been selected) screen will go directly to the Partial Stroke Menu where the Partial Stroke Break Time, Cycle Time and Cycle Count can be viewed.



- 7.2.8 Select ← to go back to Main Menu
- 7.2.9 Select ← to go back to On Line Menu. This screen may view any PST flag data.