

Digital EPIC D410/D420

For Rotary, Linear and S.I.S. Applications

Operating Manual

1. Scope of Manual

This manual contains installation, wiring instructions and calibration of the Digital EPIC D410/D420 in S.I.S. applications as a microprocessor based device, providing both 4-20 mA signal for position feedback and digital communications via the HART[®] protocol.

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.

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3. Mounting D-EPIC on a Rotary Actuator

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.

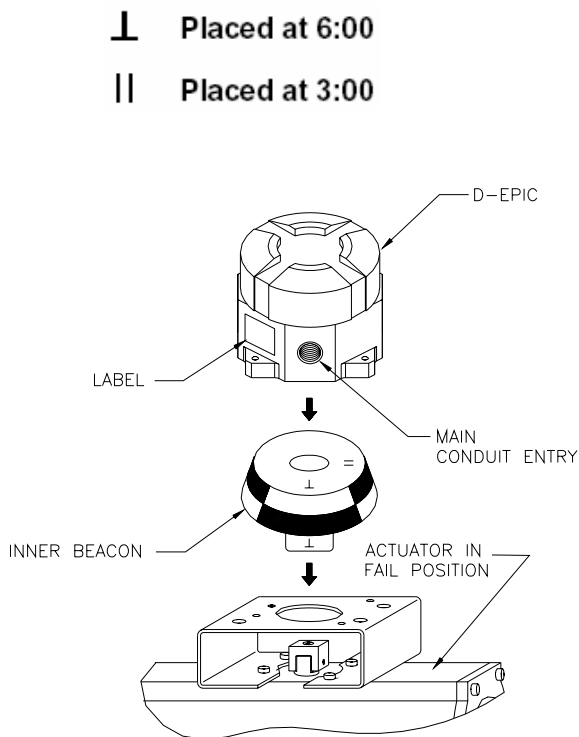


Figure 1

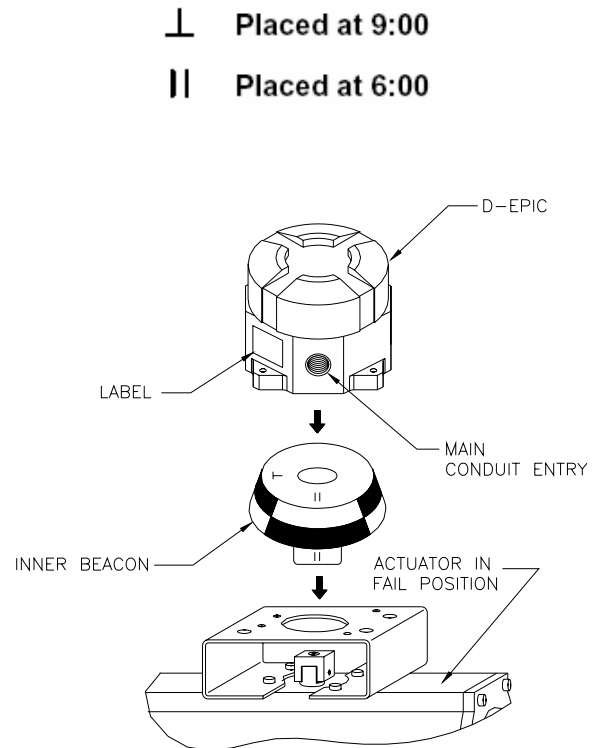


Figure 2

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4. Mounting the D-EPIC on a Linear Actuator

4.1 To Center the D-EPIC:

- 4.1.1 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.
- 4.1.2 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.
- 4.1.3 Place a third mark on the yoke centered between the upper and lower limit marks.
- 4.1.4 Lastly, mount the D-EPIC to the bracket so that the conduit entry faces away from the diaphragm or cylinder (See Figure 3)

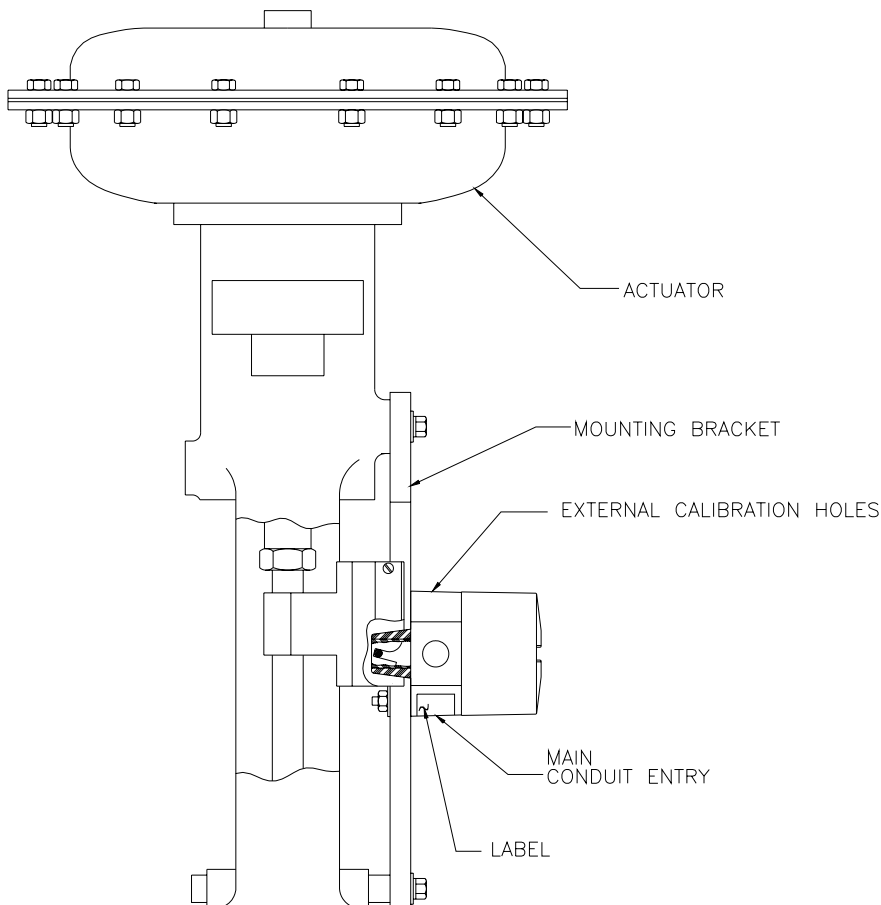


Figure 3

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Tech-375/ D.W.O. 16778



Note

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.

5. D-EPIC Wiring Instructions



WARNING

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 + H₂; Class I, Division 2, Groups A, B, C and D and AEx nA (zone 2) Enclosure Type 4 IP67.



WARNING

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.



WARNING

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.

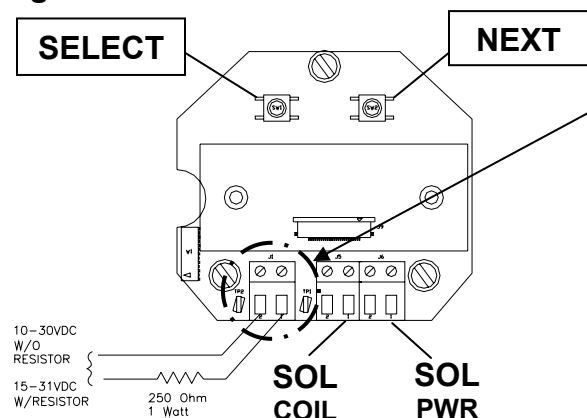
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Remove Cover and terminate twisted shielded cable to terminal J1. Terminate the solenoid valve terminal lines to terminal J5 as shown in Figure 4.

Figure 4



Two wire 4 to 20 mA current sink
(Current is proportional to the position) with 10 VDC Min. to 30 VDC Max. across the Output terminals.
Terminal block accepts 14 to 22 AWG wire
Analog Input Connection polarity insensitive

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

6. Pushbutton and Magnetic Sensor Calibration Procedure (If Applicable)

Utilize the Select and Next pushbuttons Figure 5 in the enclosure or the Select and Next magnetic sensors on the side of the enclosure Figure 6 to calibrate the D-EPIC.

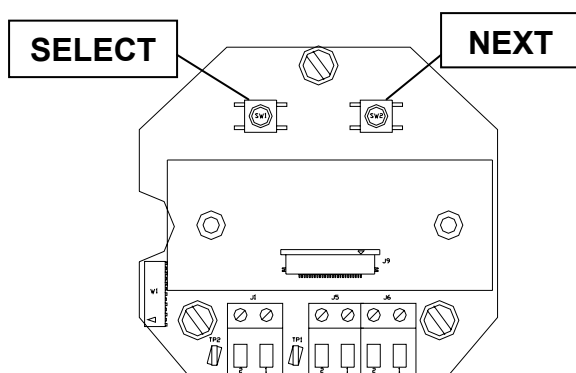


Figure 5

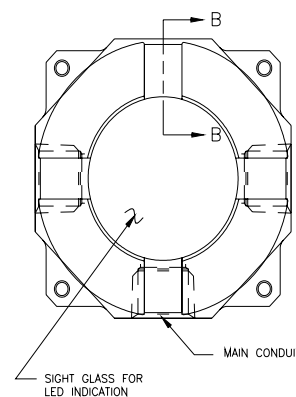
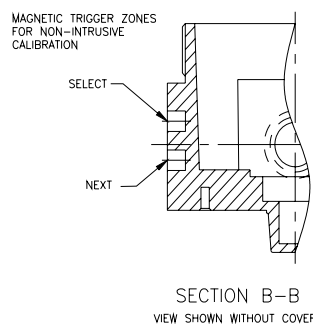
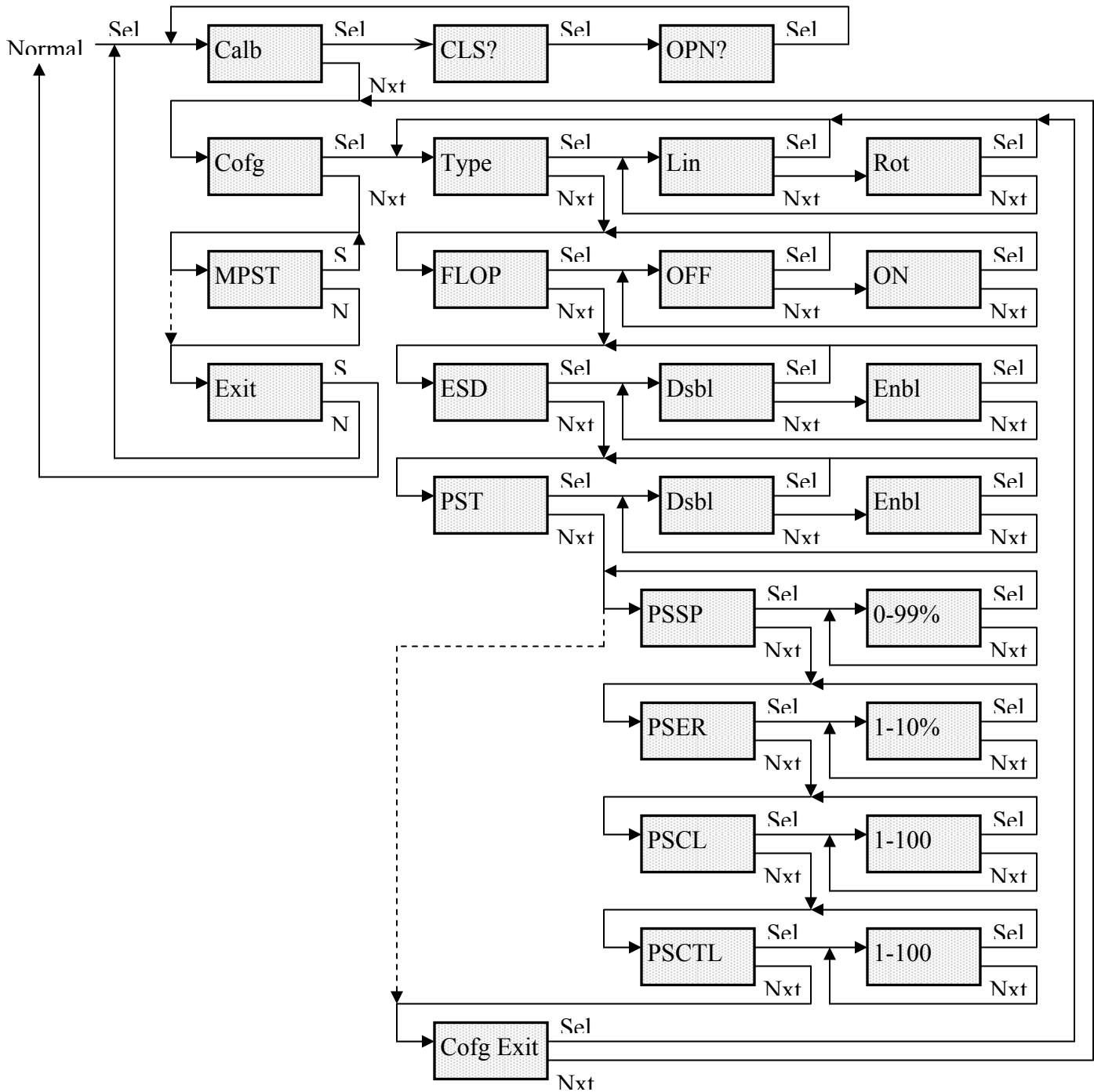


Figure 6
(If Applicable)

7. Keypad Menu Flow Diagram



Sel – Select Key
Nxt – Next Key

7.1 Quick Calibration:

1. Press and hold the Select Key until ACAL is displayed.
2. Press the Select Key to select closed calibration CLS?
3. Stroke the Valve to the De-Energized position (Closed).
4. Once the De-Energized position (Closed) is achieved then press Select to calibrate this as the CLS position.
5. Stroke the Valve to the Energized position (Open).
6. Once the Energized position (Open) is achieved then press Select to calibrate this as the OPN position.
7. Then Press the Next Key until Exit is displayed on the LCD.
8. Once Exit is displayed press the Select key to Exit calibration.

7.2 Configuration

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.

7.2.1 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.

7.2.2 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.

7.2.3 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.

7.2.4 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.

7.2.5 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.

7.2.6 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.

7.2.7 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.

7.2.8 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.

7.3 Manual Partial Stroke Test

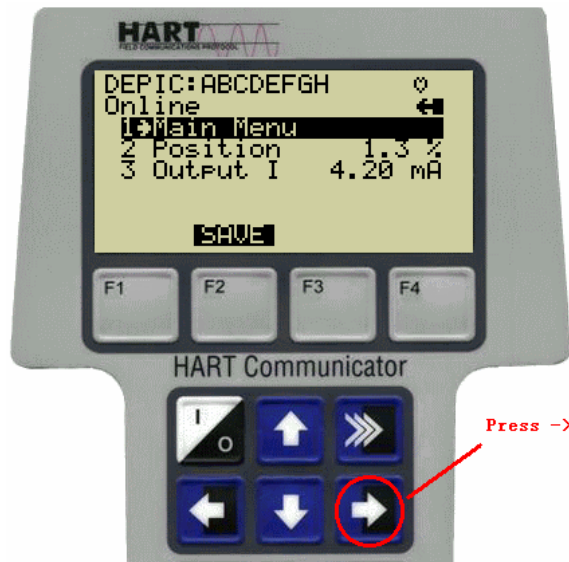
The Manual Partial Stroke Test (MPST) selection will only be available if PST is enabled. This provides a means for the user to activate a PST from the keypad (follow flow chart).

8. HART Calibration via Rosemount 275 HHP

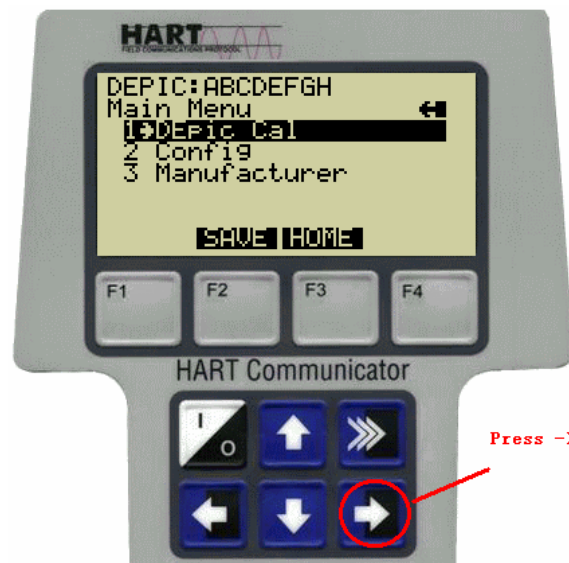
8.1 Connect D-EPIC to HART Handheld 275.

Note: in order to establish a stable communication it is necessary that the actual current valve is greater or equal than 3.3 mA. In case this condition is not verified, it is necessary to stroke the actuator to obtain the current high end valve (about 20 mA).

8.2 Select Main Menu by pressing → Key.



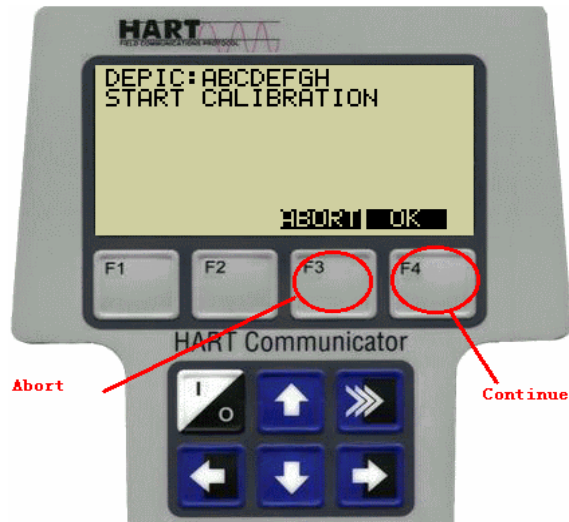
8.3 Select D-EPIC Cal by pressing → key.



8.4 Once D-EPIC selected.

8.4.1 Cal process can be aborted by pressing F3 key.

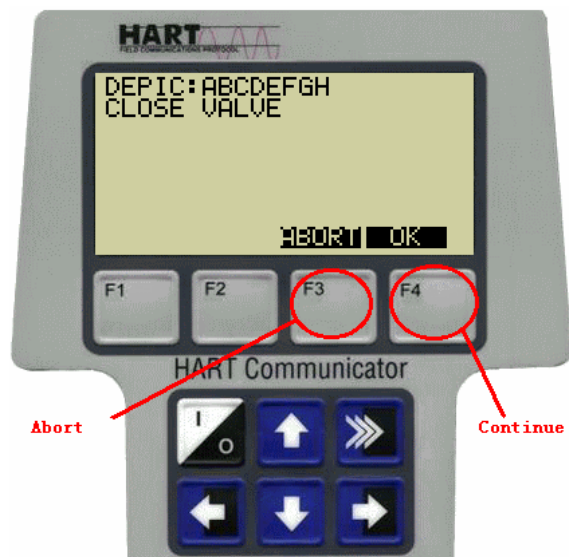
8.4.2 Cal process can be continue by pressing F4 key.



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

8.5.1 Cal Process can be aborted by pressing F3 key.

8.5.2 Cal process can be continued by pressing F4 key.



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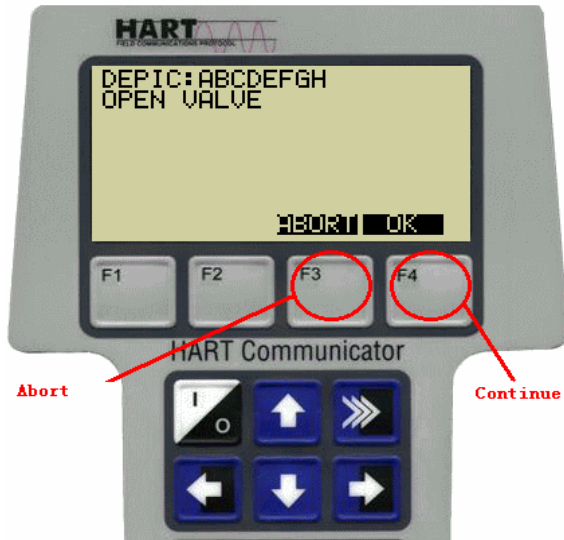
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8.6 Now open the valve and wait until the valve fully reaches the open position.

8.6.1 Cal Process can be aborted by pressing F3 key.

8.6.2 Cal process can be continued by pressing F4 key.



8.7 Finish and except the new calibrated value.

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

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



8.8 Return to online menu to read current output values by pressing ← key once.

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9. Hart Partial Stroke Test via Rosemount 275HP

9.1 Connect D-EPIC to HART Hand Held 275.

9.2 Select Main Menu by pressing → Key on 1.



9.3 Select Partial Stroke by pressing → Key on 2.



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9.4 Start Partial Stroke by pressing → Key on 1.



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



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

9.6.1 Busy Partial Stroke; F3 to abort otherwise wait for next screen

9.6.2 Finish Partial Stroke; F3 to abort otherwise wait for next screen

9.6.3 Partial Stroke Success; F3 to abort otherwise wait for next screen

9.6.4 Finish Partial Stroke; F3 to abort or F4 to accept

9.7 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.



9.8 Select ← to go back to Main Menu

9.9 Select ← to go back to On Line Menu