Signet 8450-3 Pressure Transmitter

3-8450.090-3

3-8450.090-3   Rev. H   11/11   English

+GF+

Pres1:   4.5 psi
Pres2:   2.3 psi

Signet Pressure
Transmitter

▲ ▼ ► ENTER

CAUTION!
⚠️
- Remove power to unit before wiring input and output connections.
- Follow instructions carefully to avoid personal injury.
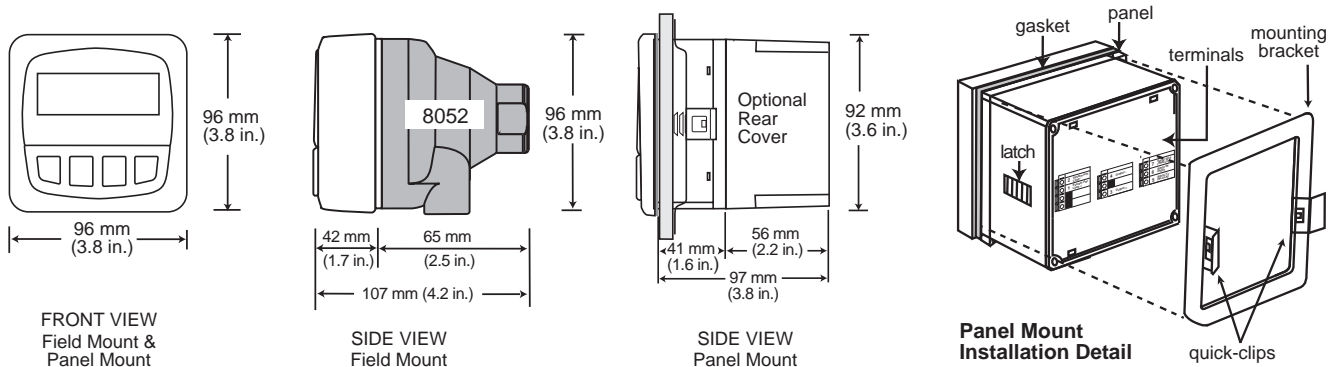
Contents
1. Installation
2. Specifications
3. Electrical Connections
4. Menu Functions

1.   Installation

ProcessPro transmitters are available in two styles: panel mount and field mount. The panel mount is supplied with the necessary hardware to install the transmitter. This manual includes complete panel mounting instructions.

Field mounting requires one of two separate mounting kits. The 3-8052 integral kit joins the sensor and instrument together into a single package. The 3-8050 Universal kit enables the transmitter to be installed virtually anywhere.

Detailed instructions for integral mounting or other field installation options are included with the 3-8052 Integral kit or the 3-8050 Universal kit.

1.1 Panel Installation
1. The panel mount transmitter is designed for installation using a ¼ DIN Punch. For manual panel cutout, an adhesive template is provided as an installation guide. Recommended clearance on all sides between instruments is 1 inch.
2. Place gasket on instrument, and install in panel.
3. Slide mounting bracket over back of instrument until quick-clips snap into latches on side of instrument.
4. To remove, secure instrument temporarily with tape from front or grip from rear of instrument. DO NOT RELEASE.
Press quick-clips outward and remove.

FRONT VIEW
Field Mount &
Panel Mount

SIDE VIEW
Field Mount

SIDE VIEW
Panel Mount

**Panel Mount
Installation Detail**

2.   Specifications

General

Compatibility: Signet 2450 Pressure Sensor

Accuracy: ±1% of full scale

Enclosure:
- Case: PBT
- Panel case gasket: Neoprene
- Window: Polyurethane coated polycarbonate
- Keypad: Sealed 4-key silicone rubber
- Weight: Approx. 325 g (12 oz.)

Display:
- Alphanumeric   2 x 16 LCD
- Update rate: 1 second
- Contrast: User selected, 5 levels

Electrical

Power: 12 to 24 VDC ±10%, regulated,
                     60 mA max current

Sensor Input:
- Range: 0-250 psig, 0-17 bar, 0-1700 kPa

Current output:
- 4 to 20 mA, isolated, fully adjustable and reversible
- Max loop impedance: 50 Ω max. @ 12 V,
                          325 Ω max. @ 18 V,
                          600 Ω max. @ 24 V

- Update rate: 100 ms
- Accuracy: ±0.03 mA

Open-collector output: Hi, Lo, Off, Programmable:
- Optically isolated, 50 mA max. sink, 30 VDC max. pull-up voltage
- Hysteresis: User adjustable

Environmental
- Operating temperature: -10 to 70 °C (14 to 158 °F)
- Storage temperature: -15 to 80 °C (5 to 176 °F)
- Relative humidity: 0 to 95%, non-condensing
- Maximum altitude: 2000 m (6562 ft)
- Insulation category: II
- Rating: NEMA 4X/IP65 front

Standards and Approvals
- CE, UL listed
- Immunity: EN50082-2
- Emissions: EN55011 Class B
- Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management
- 🔶25 China RoHS (Go to www.gfsignet.com for details)

3. Electrical Connections

⚠️ **Caution:** Failure to fully open terminal jaws before removing wire may permanently damage instrument.

Wiring Procedure
1. Remove 0.5 - 0.625 in. (13-16 mm) of insulation from wire end.
2. Press the orange terminal lever downward with a small screwdriver to open terminal jaws.
3. Insert exposed (non-insulated) wire end in terminal hole until it bottoms out.
4. Release orange terminal lever to secure wire in place. Gently pull on each wire to ensure a good connection.

Wiring Removal Procedure
1. Press the orange terminal lever downward with a small screwdriver to open terminal jaws.
2. When fully open, remove wire from terminal.

Wiring Tips:
- Do not route sensor cable in conduit containing AC power wiring. Electrical noise may interfere with sensor signal.
- Routing sensor cable in grounded metal conduit will help prevent electrical noise and mechanical damage.
- Seal cable entry points to prevent moisture damage.
- Only one wire should be inserted into a terminal. Splice double wires outside the terminal.
- If your system uses a single sensor, it must be located within 400 ft. (122 m) of the transmitter.
- If your system uses two sensors, the total length of cable connected to the transmitter is limited to 400 ft.
- The 3 conductors from a dual-sensor system can be tied together and then a single set of wires continued on to the transmitter.
- For best performance, ground the sensor SHIELD wire to a local earth ground at a point near the sensor.
  (Experiment with connecting the sensor shield wire to different local ground points to identify best signal quality.)

Terminals 3-4: Primary Loop Power
12-24 VDC ±10% system power and current loop connections.
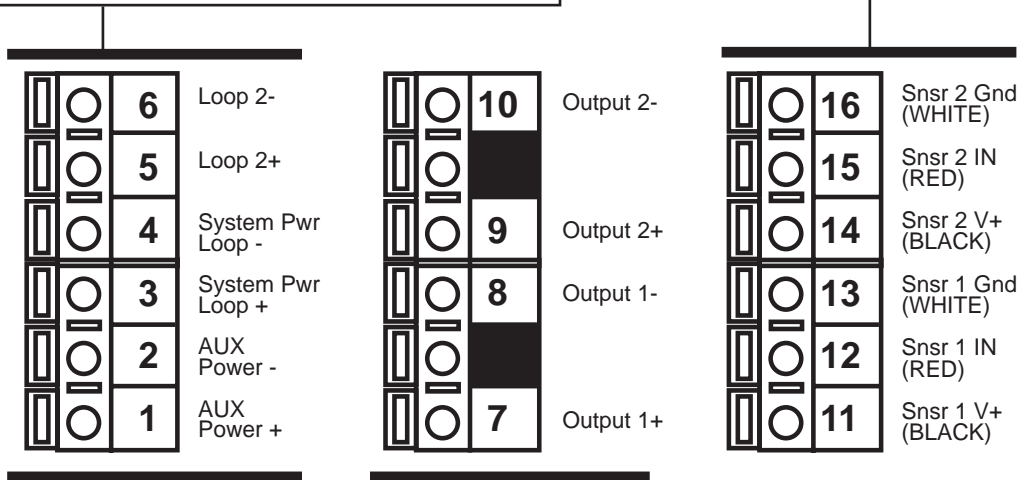SINGLE SENSOR system MUST use terminals 3-4.
Terminals 5-6: 12-24 VDC ± 10%
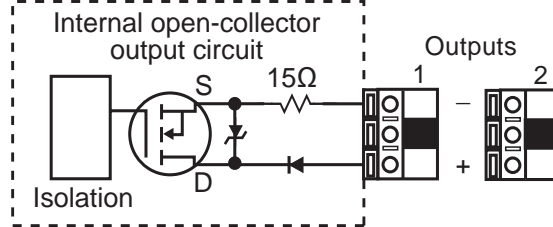Power and current loop connections for second sensor.
- Maximum loop impedance:
    50Ω max. at 12 V
    325Ω max. at 18 V
    600Ω max. at 24V

Terminals 11-16: Dual digital sensor inputs
See next page for more information.

Terminal	Description
6	Loop 2-
5	Loop 2+
4	System Pwr Loop -
3	System Pwr Loop +
2	AUX Power -
1	AUX Power +

Terminal	Description
10	Output 2-
9	Output 2+
8	Output 1-
7	Output 1+

Terminal	Description
16	Snsr 2 Gnd (WHITE)
15	Snsr 2 IN (RED)
14	Snsr 2 V+ (BLACK)
13	Snsr 1 Gnd (WHITE)
12	Snsr 1 IN (RED)
11	Snsr 1 V+ (BLACK)

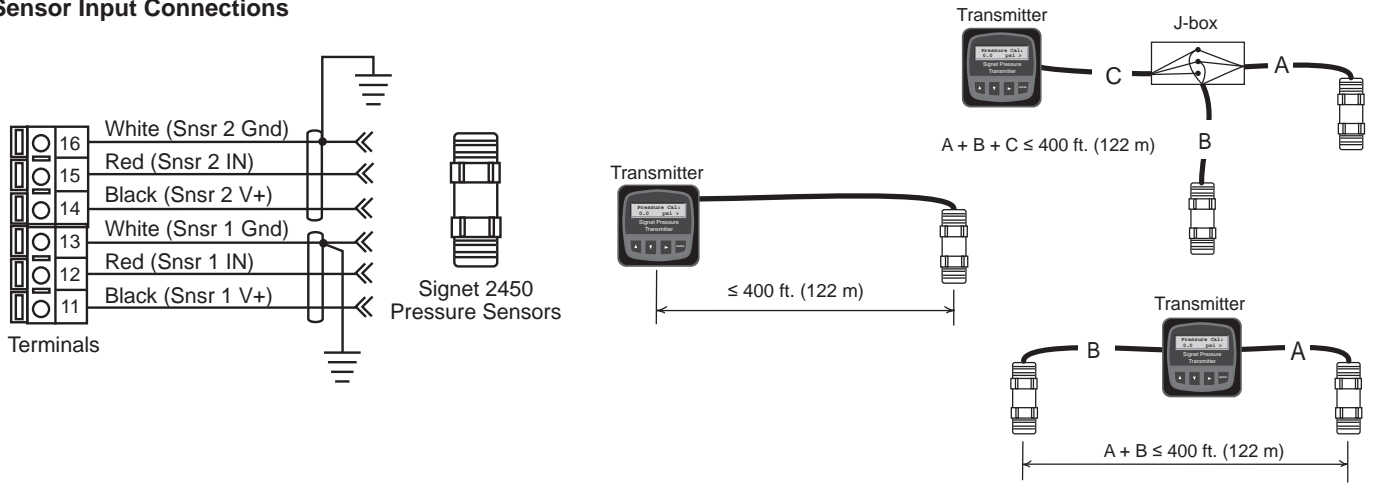**Terminals 1-2:** Auxiliary power is used only if two sensors are connected to the transmitter.

Internal open-collector output circuit

15Ω

Outputs 1 2
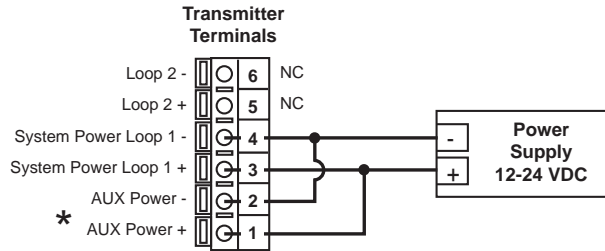
Isolation

Terminals 7-10: Open-Collector Outputs
- Two transistor outputs programmable as High or Low alarm with adjustable hysteresis
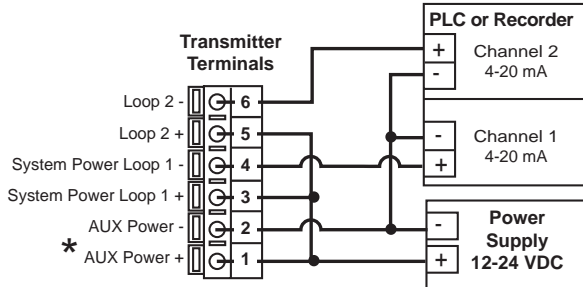- Outputs can be disabled (Off) if not used

3.1 Sensor Input Connections

White (Snsr 2 Gnd) — 16
Red (Snsr 2 IN) — 15
Black (Snsr 2 V+) — 14
White (Snsr 1 Gnd) — 13
Red (Snsr 1 IN) — 12
Black (Snsr 1 V+) — 11

Terminals

Signet 2450
Pressure Sensors

Transmitter

J-box

A + B + C ≤ 400 ft. (122 m)

Transmitter

≤ 400 ft. (122 m)

Transmitter

A + B ≤ 400 ft. (122 m)

3.2 System Power/Loop Connections

Stand-alone application, no current loop used

Transmitter Terminals

Loop 2 - | 6 | NC
Loop 2 + | 5 | NC
System Power Loop 1 - | 4
System Power Loop 1 + | 3
AUX Power - | 2
* AUX Power + | 1

Power Supply 12-24 VDC

* AUX power required only where two sensors are used

Connection to a PLC/Recorder, separate supply

PLC or Recorder

+ Channel 2 4-20 mA
-

Transmitter Terminals

Loop 2 - | 6
Loop 2 + | 5
System Power Loop 1 - | 4
System Power Loop 1 + | 3
AUX Power - | 2
* AUX Power + | 1

- Channel 1 4-20 mA
+

Power Supply 12-24 VDC

* AUX power required only where two sensors are used

Connection to a PLC with built-in power supply

Transmitter Terminals

Loop 2 - | 6
Loop 2 + | 5
System Power Loop 1 - | 4
System Power Loop 1 + | 3
AUX Power - | 2
* AUX Power + | 1

PLC Terminals

+ Channel 2 4-20 mA
-
+ Channel 1 4-20 mA
-
- Power Supply 12-24 VDC
+

Internal PLC Connection
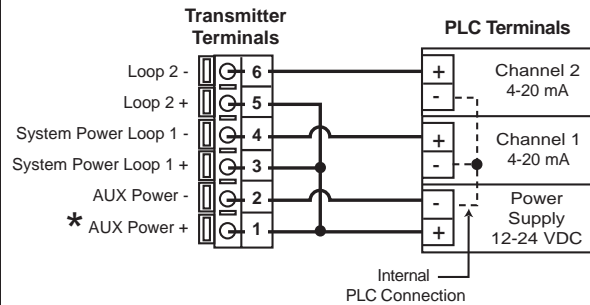
* AUX power required only where two sensors are used

Example: Two transmitters connected to PLC/Recorder with separate power supply

PLC or Recorder

+ Channel 1 4-20 mA in
-
+ Channel 2 4-20 mA in
-
- Channel 3 4-20 mA in
+
- Channel 4 4-20 mA in
+

Transmitter 1 Terminals

Loop 2 - | 6
Loop 2 + | 5
System Power Loop 1 - | 4
System Power Loop 1 + | 3
AUX Power - | 2
* AUX Power + | 1

Transmitter 2 Terminals

6 | Loop 2 -
5 | Loop 2 +
4 | System Power Loop 1 -
3 | System Power Loop 1 +
2 | AUX Power -
1 | AUX Power + *

Power Supply 12-24 VDC
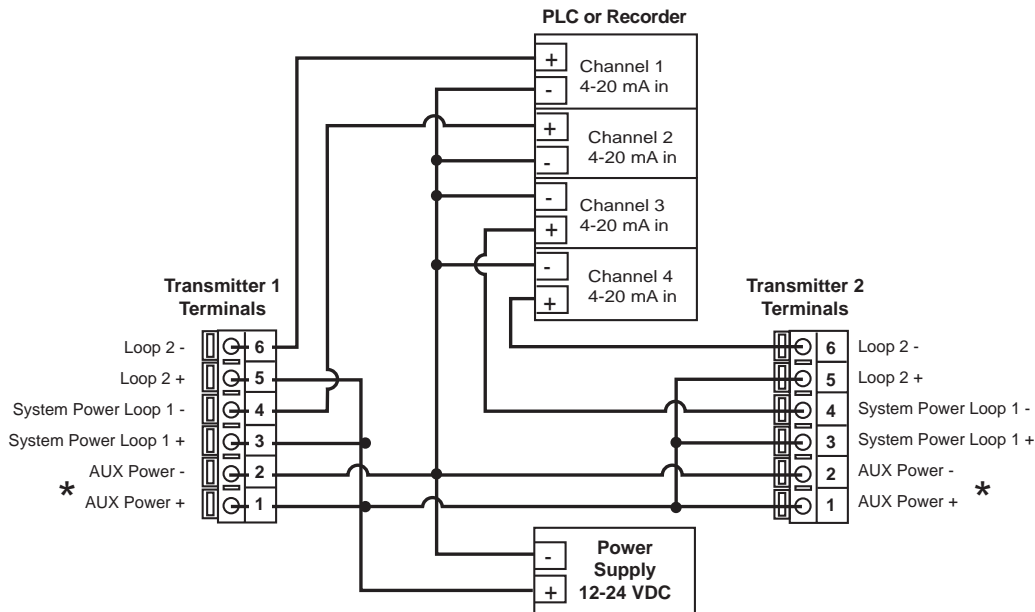
* AUX power required only where two sensors are used

3.3 Open Collector Output

The Open Collector output can be used as a switch that responds when the process variable moves above or below a setpoint.

- **Low:**

Output triggers when process variable is less than the setpoint. The output will relax when the process variable moves above the setpoint plus the hysteresis value.

- **High:**

Output triggers when process variable is greater than the setpoint. The output will relax when the process variable moves below the setpoint plus the hysteresis value.
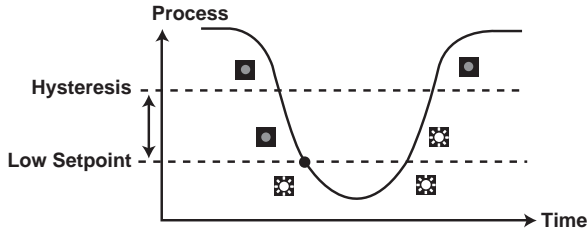
Output energized
Output de-energized
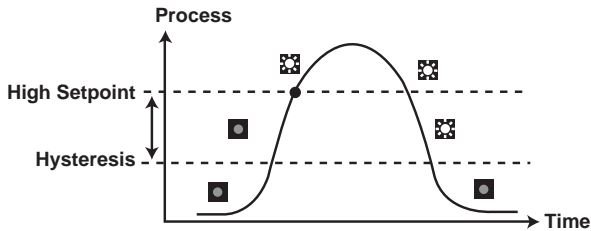

Delta Pressure (Differential Mode)

If two sensors are connected to the transmitter, the DELTA (Sensor 1 - Sensor 2) can be assigned to output. To enable differential mode, the selected output's "Source" selection must be set to "DP".

For pressure and temperature transmitters ensure Sensor 1 is equal to ID 1:
Sensor 1 - Sensor 2
Difference = 60

Example: 4-20 mA
Loop1 Source: DP
Loop1 Range: 0-120
Loop1: = 12.00 mA

Example: Output
Output1 Source: DP
Output1 Mode: Low
Output1 Setpoint: 70
Output1 = ON
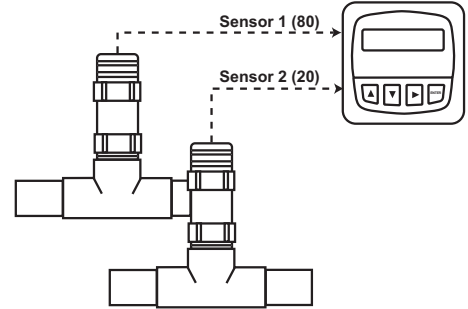
VIEW menu

- During normal operation, the ProcessPro displays the VIEW menu.
- When using the CALIBRATE or OPTIONS menus, the ProcessPro will return to the VIEW menu if no activity occurs for 10 minutes.
- To select the item you want displayed, press the UP or DOWN arrow keys. The items will scroll in a continuous loop.
- Changing the display selection does not interrupt system operations.
- No keycode is necessary to change display selection.
- Output settings cannot be edited from the VIEW menu.

View Menu
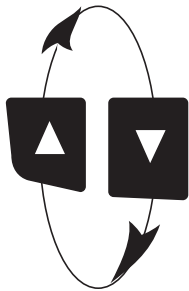
Display	Description
Press1: 7.89 psi Press2: 4.56 psi	Monitor Pressure 1 and Pressure 2 simultaneously. This is the permanent view display.
Delta Pressure: 3.33 psi	Monitor the delta pressure (Channel 1 rate - channel 2 rate = Delta Pressure) This is a permanent display.

The displays below are temporary. After 10 minutes the display returns to the permanent display.

Display	Description
Loop 1 Output: 12.00 mA Loop 2 Output: 7.65 mA	Monitor the 4 to 20 mA output for Loop 1 and 2.
Last CAL: 02-10-09	Monitor date for scheduled maintenance or date of last calibration. (See description in Calibrate Menu.)

ProcessPro Editing Procedure:

Step 1. **Press and hold ENTER key:**
- 2 seconds to select the CALIBRATE menu
- 5 seconds to select the OPTIONS menu.

Step 2. **The Key Code is UP-UP-UP-DOWN keys in sequence.**
- After entering the Key Code, the display will show the first item in the selected menu.

Step 3. **Scroll menu with UP or DOWN arrow keys.**

Step 4. **Press RIGHT ARROW key to select menu item to be edited.**
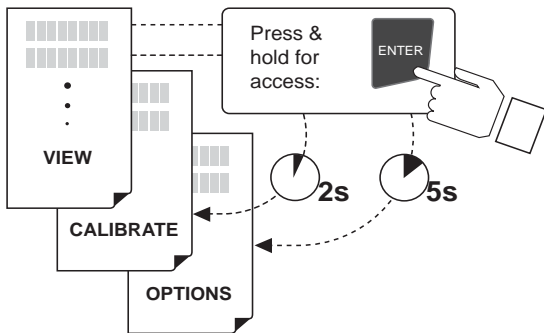- The first display element will begin flashing.

Step 5. **Press UP or DOWN keys to edit the flashing element.**
- RIGHT ARROW key advances the flashing element.

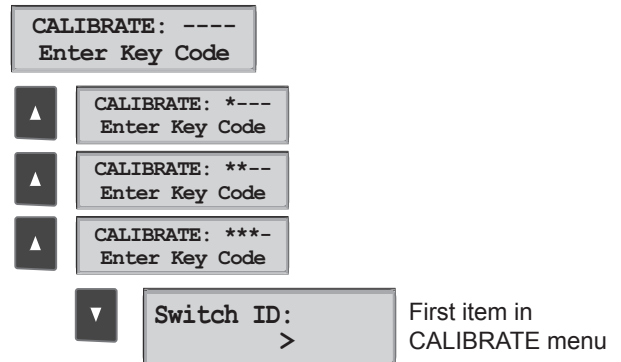**Step 6.** **Press ENTER key to save the new setting and return to Step 3.**

Notes on Step 1:
- The View Menu is normally displayed.
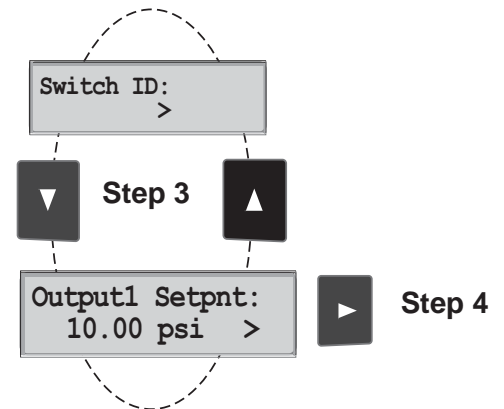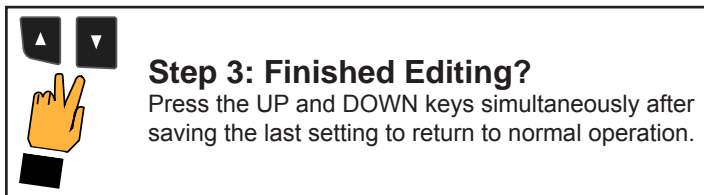- The CALIBRATE and OPTIONS menus require a KEY CODE.

Notes on Step 2:
If no key is pressed for 5 minutes while display is showing "Enter Key Code", the display will return to the VIEW menu.

```
CALIBRATE: ----
  Enter Key Code
```
```
CALIBRATE: *---
  Enter Key Code
```
```
CALIBRATE: **--
  Enter Key Code
```
```
CALIBRATE: ***-
  Enter Key Code
```
```
Switch ID:
             >
```
First item in CALIBRATE menu

Press & hold for access: ENTER VIEW 2s 5s CALIBRATE OPTIONS

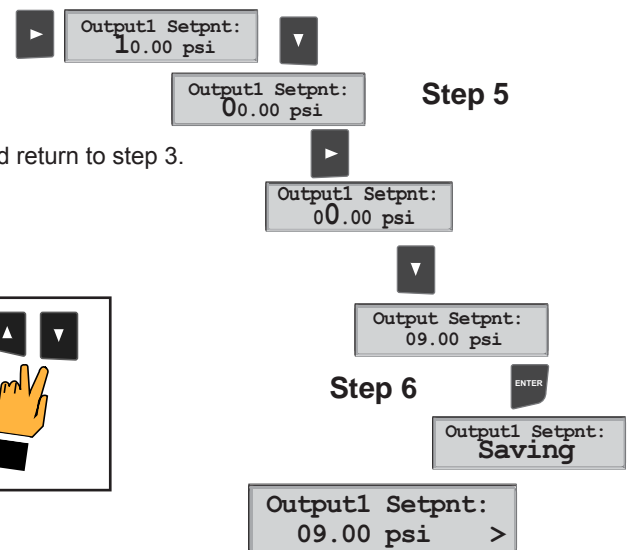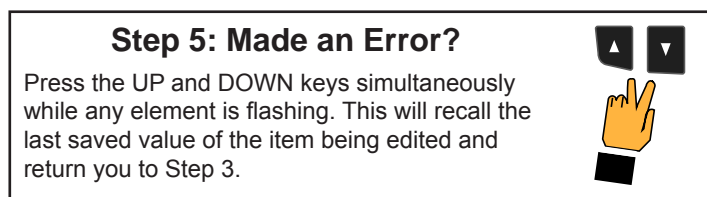**Notes on Steps 3 and 4:**
- Refer to pages 6 and 7 for complete listing of menu items and their use.
- From the Step 3 display, pressing the UP and DOWN keys simultaneously will return the display to the VIEW menu.
- If no key is pressed for 10 minutes, display will also return to the VIEW menu.

Step 3: Finished Editing?
Press the UP and DOWN keys simultaneously after saving the last setting to return to normal operation.

```
Switch ID:
             >
```
Step 3
```
Output1 Setpnt:
  10.00 psi   >
```
Step 4

Notes on Steps 5 and 6:
- All output functions remain active during editing.
- Only the flashing element can be edited.
- RIGHT ARROW key advances the flashing element in a continuous loop.
- Edited value is effective immediately after pressing ENTER key.
- If no key is pressed for 10 minutes unit will restore the last saved value and return to step 3.
- Step 6 (pressing ENTER key) always returns you to Step 3.
- Repeat steps 3-6 until all editing is completed.

Step 5: Made an Error?
Press the UP and DOWN keys simultaneously while any element is flashing. This will recall the last saved value of the item being edited and return you to Step 3.

```
Output1 Setpnt:
  10.00 psi
```
```
Output1 Setpnt:
  00.00 psi
```
Step 5
```
Output1 Setpnt:
  00.00 psi
```
```
Output Setpnt:
  09.00 psi
```
Step 6
```
Output1 Setpnt:
  Saving
```
```
Output1 Setpnt:
  09.00 psi   >
```

Calibrate Menu

Display (Factory settings shown)	Description
Switch ID PSI	Reverses the identification of Sensor inputs: Pressure 1 becomes identified as Pressure 2, Pressure 2 becomes identified as Pressure1. Use this function to make corrections if the sensors are in the wrong order for a DELTA PRESSURE measurement.
Pressure Units: psi >	Select Pressure units for both input channels: psi, bar or kPa.
Set: Pressure1 Set: Pressure2	Provides a maximum 5 psi offset to match 8450 to external reference. Enter "-999" to restore the original Factory calibration value. Changes to this setting will become effective when the display exits the Calibrate menu.
Loop 1 Source Pressure1	Select the INPUT SIGNAL represented by this 4-20 mA output: Pressure 1, Pressure 2, or Delta Pressure (Pressure1 - Pressure2.)
Loop 1 Range: psi 0.0 → 100.0 >	Check the 2450 Sensor instructions for the range capability of your sensor. Be sure to modify this setting if you change the Pressure Units.
Output 1 Source Pressure1	Select the INPUT SIGNAL represented by this Open Collector Output: Pressure 1, Pressure 2, or the Delta Pressure (Pressure1 - Pressure2.)
Output1 Mode: Low >	Select the desired mode of operation for the Open Collector output. Options available are High or Low. The signal may be disabled (Off) if not used.
Output1 Setpnt: 10.0 psi >	In Low or High Mode, the Open Collector output #1 will be activated when the pressure reaches this value. Be sure to modify this setting if you change the Pressure Units.
Output1 Hys: 5 >	The Open Collector output will be de-energized at Setpoint ± Hysteresis, depending on High or Low Setpoint selection.
Last CAL: 2-10-09	Use this "note pad" to record important dates, such as annual recertification or scheduled maintenance.

Menu items will repeat for Loop 2 and Output 2.

Options Menu

Display (Factory settings shown)	Description
Contrast: 3 >	Adjust the LCD contrast for best viewing. A setting of 1 is lowest contrast, 5 is highest. Select lower contrast if the display is in warmer ambient surroundings.
Decimal *****. >	Set the decimal to the best resolution for your application. The display will automatically scale up to this resolution. Select *****., ****.*, ***.**, **.*** or *.****
Averaging Off >	OFF provides the quickest output response to changes in flow. Longer averaging period produces more stable display and output response. Select LOW, HIGH or OFF.
Output1 Active Low > **Output2 Active** Low >	Active HIGH: This setting is used to turn a device (pump, valve) ON at the setpoint. Active LOW: This setting is used to turn a device OFF at the setpoint.
Loop1 Adjust 4.00 mA > **Loop1 Adjust** 20.00 mA >	Adjust the minimum and maximum current output. Use this setting to match the system output to any external device. The display value represents the precise current output. Adjustment limits: • 3.80 mA < 4.00 mA > 5.00 mA • 19.00 mA < 20.00 mA > 21.00 mA
Test Loop 1: > **Test Loop 2:** >	Press UP or DOWN keys to manually order any output current value from 3.6 mA to 21.00 mA to test current loop output.
Test Output 1: > **Test Output 2:** >	Press UP or DOWN keys to manually toggle the state of open collector output.

Menu items will repeat for Loop 2 and Output 2.

Troubleshooting

Display Condition	Possible Causes	Suggested Solutions
Check Sensor?	• Sensor not wired properly. • Sensor connected to 8450 while power is on. • Defective sensor.	• Correct sensor wiring. • Recycle power with all sensors connected. • Replace defective sensor.
Too much error CHECK SENSOR	The value entered in Set Pressure field is greater than 5 psi deviation from sensor input. (The 8450 allows a maximum of 5 psi calibration offset.).	• Confirm calibration values. • Remove sensor from installation, check 8450 reading (should be zero). If necessary, Set Pressure to zero, reinstall sensor, then recalibrate.
Reset to Factory Calibration	Value in SET PRESSURE field is -999.	Entering "-999" in this field will remove all user calibration input and restore the factory values.
Relay is always activated	• Hysteresis value too large • Defective transmitter	• Change the hysteresis value • Replace transmitter
SETUP READ ERROR Press Any Key	Memory fault occurred.	• Press any key to reload factory presets. • Reprogram all setpoints. • If this message appears again, replace the 8450.

Ordering Information

Mfr. Part No.	Code	Description
3-8450-1	159 000 041	Pressure transmitter, Field mount
3-8450-1P	159 000 042	Pressure transmitter, Panel mount
3-8450-2	159 000 043	Pressure transmitter, Field mount with relays
3-8450-2P	159 000 044	Pressure transmitter, Panel mount with relays
3-8450-3	159 000 045	Pressure transmitter, Field mount with dual input/output
3-8450-3P	159 000 046	Pressure transmitter, Panel mount with dual input/output

Accessories

Mfr. Part No.	Code	Description
3-8050	159 000 184	Universal mounting kit
3-8052	159 000 188	3/4 in. Integral mounting kit
3-8052-1	159 000 755	3/4 in. NPT mount junction box
3-8050.395	159 000 186	Splashproof rear cover
3-8050.396	159 000 617	RC Filter kit (for relay use)
3-0000.596	159 000 641	Heavy duty wall mount bracket
3-5000.598	198 840 225	Surface Mount Bracket
3-9000.392	159 000 368	Liquid tight connector kit for rear cover (includes 3 connectors)
3-9000.392-1	159 000 839	Liquid tight connector kit, NPT (1 piece)
3-9000.392-2	159 000 841	Liquid tight connector kit, PG13.5 (1 piece)

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