

# +GF+ SIGNET 525 Metalex Flow Sensor

ENGLISH



P52590-1



I-8/02 English

## WARNING! SAFETY INSTRUCTIONS



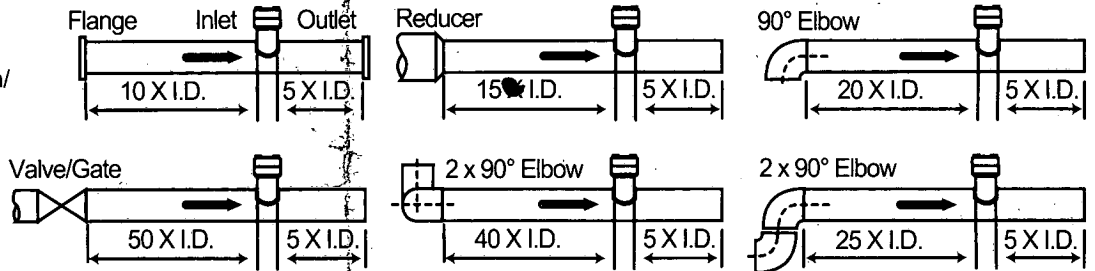
1. Do not remove from pressurized lines.
2. Do not exceed maximum temperature/pressure specifications.
3. Pipe fitting must be installed by certified welder only.
4. Do not install/service without following installation instructions (see sensor manual).
5. Wear safety goggles and faceshield during installation/service.
6. Do not alter product construction.
7. Failure to follow safety instructions could result in severe personal injury!

## Maximum Operating Temperature/Pressure:

- +GF+ SIGNET 525 Metalex Sensor with:
- +GF+ SIGNET 526-1XXX Series Saddle Fitting: -21 bar @ 66 °C (300 psi @ 150 °F)
  - +GF+ SIGNET 526-2XXX Series Tee and Mini-Tap Fitting: 103 bar @ 149 °C (1500 psi @ 300 °F)

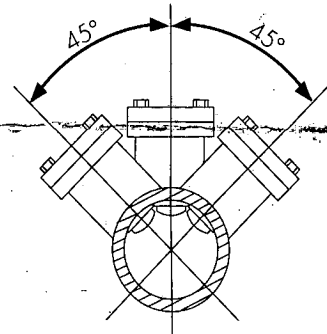
## 1. Location of Fitting

Recommended sensor upstream/downstream mounting requirements.



## 2. Sensor Mounting Position

- Horizontal pipe runs: Mount sensor in the upright (0°) position for best overall performance. Mount at a maximum of 45° when air bubbles are present. Do not mount on the bottom of pipe when sediments are present.
- Vertical pipe runs: Sensor must be mounted in lines with UPWARD flow only.

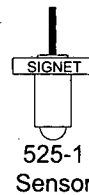


## 3. Sensor/Fitting Selection

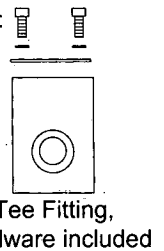
The 525 is designed for installation into SCH 40 stainless steel pipes via +GF+ SIGNET Metalex Tee, Mini-Tap or Saddle fittings, see options below:

### +GF+SIGNET Metalex Tee Fittings

Pipe (in.)	Sensor	Fitting	Code
0.50	P525-1	P526-2005	198 840 501
0.75	P525-1	P526-2007	198 840 502
1.00	P525-1	P526-2010	198 840 503

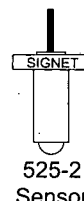


Wetted fitting materials:  
316 SS

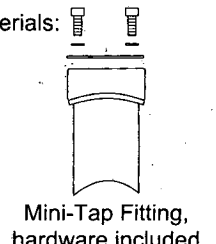


### +GF+ SIGNET Metalex Mini-Tap Fittings

Pipe (in.)	Sensor	Fitting	Code
1.25	P525-2	P526-2012	159 000 494
1.50	P525-2	P526-2015	198 840 506
2.00	P525-2	P526-2020	159 000 495
2.50	P525-2	P526-2025	159 000 496
3.00	P525-2	P526-2030	159 000 497
4.00	P525-2	P526-2040	159 000 498
5.00	P525-2	P526-2050	159 000 499
6.00	P525-2	P526-2060	159 000 500
8.00	P525-2	P526-2080	159 000 501
10.0	P525-2	P526-2100	159 000 502
12.0	P525-2	P526-2120	159 000 503



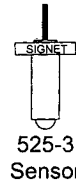
Wetted fitting materials:  
316 SS & 347 SS



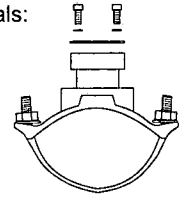
## +GF+ SIGNET Metalex Saddle Fittings

Pipe (in.)	Sensor	Fitting	Code
2.00	P525-3	P526-1020	159 000 484
2.50	P525-3	P526-1025	159 000 485
3.00	P525-3	P526-1030	159 000 486
4.00	P525-3	P526-1040	159 000 487
5.00	P525-3	P526-1050	159 000 488
6.00	P525-3	P526-1060	159 000 489
8.00	P525-3	P526-1080	159 000 490
10.0	P525-3	P526-1100	159 000 491
12.0	P525-3	P526-1120	159 000 492

Wetted fitting materials:  
Ductile Iron, 347 SS,  
Carbon steel,  
Buna-N/Neoprene



525-3  
Sensor



Saddle Fitting,  
hardware included

## 4. Fitting Installation, Required Hardware

+GF+ SIGNET Metalex Tee & Mini-Tap Fittings, P525-2XXX

- 0.5 to 1 inch pipes, P526-2 series fitting required
- 1.25 to 12 inch pipes: P526-2 series fitting and 27 mm (1-1/16 in.) diameter drill required
- Mini-Tap fittings are welded onto the pipe and are used with +GF+ SIGNET 525-1 sensors.

+GF+ SIGNET Metalex Saddle Fitting, P526-1XXX

- 27 mm (1-1/16 in.) diameter drill required

Saddle type fittings are strapped to the pipe and are used with +GF+ SIGNET 525-3 sensors. Welds MUST be made by a certified welder who is licensed to weld stainless steel and other high-carbon grade steels.

### 4.1 Installation, Tee & Mini-Tap Fittings

1. Select an appropriate mounting location as outlined in sections 1 and 2.
2. Depressurize and drain pipe.
3. Use the following welding and installation procedures appropriate for your fitting/pipe size:

+GF+ SIGNET Tee Fittings, 0.5 to 1 inch:

- Insert pipe into fitting socket
- Make sure the pipe is parallel to the bottom of the Mini-Tap fitting.

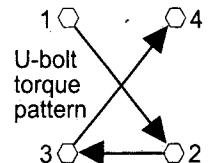
- Weld pipe into place

+GF+ SIGNET Mini-Tap Fittings, 1.25 to 12 inch:

- Drill a 27 mm (1-1/16 in.) diameter hole completely through the ONE surface of the pipe. Thoroughly deburr inner and outer edges of hole.
- Tack weld the Mini-Tap fitting onto the pipe, making sure the hole in the pipe is lined up with the Mini-Tap fitting hole.
- Weld the Mini-Tap fitting onto the pipe.

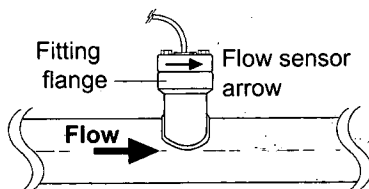
### 4.2 Installation, Saddle Fittings

1. Select an appropriate mounting location as outlined in sections 1 and 2.
2. Drill a 27 mm (1-1/16 in.) diameter hole completely through the TOP surface of the pipe. Thoroughly deburr inner and outer edges of hole.
3. Place the Buna-N/Neoprene saddle O-ring over the pipe hole (small hole side towards pipe). Position the saddle fitting over the O-ring, making sure the O-ring centers on the underside fitting ridge. Center saddle fitting and O-ring over the pipe hole, then strap the fitting to the pipe with the two U-bolts. Snug all four nuts in a criss-cross pattern. Using a torque wrench (when possible) torque the U-bolts in a criss-cross pattern to 52 foot-pounds.

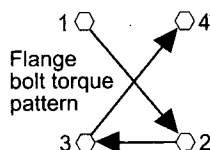


## 5. Sensor Installation

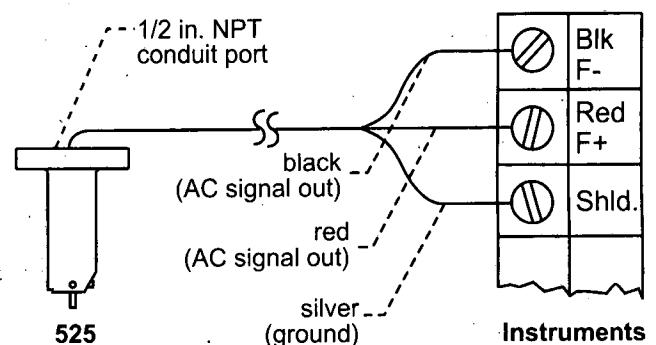
1. Set the gasket supplied with the fitting onto the fitting flange, making sure the holes align.
2. Remove the red rotor protection cap and insert the sensor into the fitting, making sure not to bump the rotor assembly. Make sure the arrow on the side of the sensor is pointing in the direction of flow.



3. Slip two washers onto each bolt and insert the bolt/washer onto each of the four fitting flange holes.
4. Snug all four flange bolts in a criss-cross pattern. Using a torque wrench (when possible), torque the flange nuts in a criss-cross pattern to 52 foot-pounds.



## 6. Sensor Wiring



- Use 2-conductor shielded cable for cable splices to 60 m (200 ft)
- Maintain cable shield through splice.
- Shield the unjacketed silver (ground) wire using electrical tape to prevent potential noise interference and/or shorting hazards.
- +GF+ SIGNET Intelek-Pro, use 525 input card setting.

## 7. Sensor Removal Procedure

1. Depressurize and drain pipe.
2. Remove the four sensor flange bolts and lockwashers. Pull upward on the sensor flange with an alternating twisting motion.



### WARNING!

Do not remove from pressurized lines. Wear safety goggles and faceshield during installation/service.



## 8. Maintenance

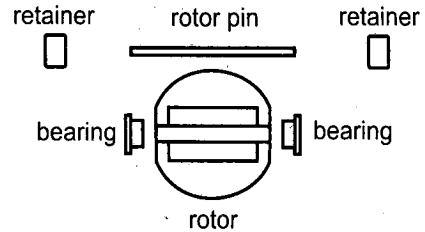
The 525 sensor requires little or no maintenance of any kind, with the exception of an occasional sensor/paddlewheel cleaning.

## 9. Accessories

Refer to section 3 for a list of available Metalex sensors and fittings.

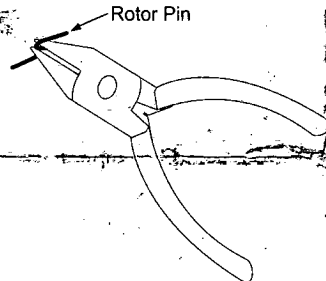
Part no.	Description	Code
P52590-1	Instruction manual	159 000 482
P52648	Fitting cap kit, cap and gasket	198 820 047
P52504-1	Rotor pin, 316 SS (optional)	198 801 500
P52504-2	Rotor pin, Tungsten Carbide (standard)	198 820 023
P52509	Rotor kit, 316 SS pin	198 801 501
P52509-2	Rotor kit, Tungsten pin	159 000 480

### P52509/P52509-2 Rotor kit

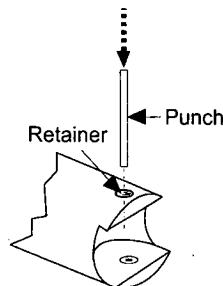


## 10. Rotor Replacement Procedure

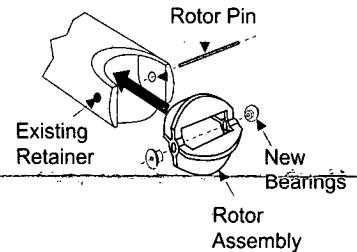
1. With a small pair of needle-nose pliers, firmly grip the center of the rotor pin (axle) and with a twisting motion, bend the rotor pin into an "S" shape. This should pull the ends of the pin out of the retainers and free the rotor assembly.



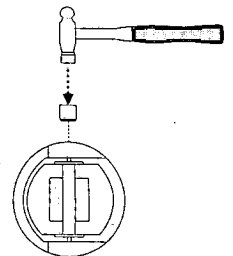
2. Remove retainer from each side by gently tapping it inwards using a punch. Install a new retainer with its rotor pin clearance hole inward. Only install one retainer at this time.



3. Insert the new rotor assembly and bearings into the rotor housing of the sensor and place the new rotor pin (axle) through the open end of the rotor housing, through the rotor and bearings, and into the previously installed retainer.



4. Tap the second retainer (rotor pin clearance hole inward) into the hole while lining up the rotor pin with the center of the retainer hole. This completes the rotor replacement procedure.



## 11. K-Factors

The K-Factor is the number of pulses the sensor will generate for each engineering unit of fluid which passes. They are listed in U.S. gallons and in liters. For example, in a 1 inch SCH 40S stainless steel pipe, the sensor generates 266.17 pulses per gallon of fluid passing the rotor. K-Factors are listed for SCH 40S stainless steel pipes up to 12 inch.

*2" SCH 80  
76.89*

### Conversion Formulas

1 U.S. gallon = 0.003785 cubic meters  
0.000003069 Acre feet  
8.3454 pounds of water

### SCH 40S STAINLESS STEEL PIPE PER ANSI B36.19

PIPE SIZE	K-FACTOR	K-FACTOR	A-FACTOR	A-FACTOR
	PULSES/ U.S. GAL	PULSES/ LITER	U.S. GPM/Hz	LPM/Hz
1/2 IN.	873.03	230.66	0.0687	0.2601
3/4 IN.	515.41	136.17	0.1164	0.4406
1 IN.	266.17	70.322	0.2254	0.8532
1 1/4 IN.	148.84	39.324	0.4031	1.5258
1 1/2 IN.	107.98	28.528	0.5557	2.1032
2 IN.	64.808	17.122	0.9258	3.5042
2 1/2 IN.	44.685	11.806	1.3427	5.0822
3 IN.	28.579	7.5506	2.0994	7.9464
4 IN.	16.302	4.3070	3.6805	13.931
5 IN.	10.237	2.7046	5.8611	22.184
6 IN.	7.0057	1.8509	8.5645	32.416
8 IN.	3.9641	1.0473	15.136	57.289
10 IN.	2.4690	0.6523	24.301	91.981
12 IN.	1.6894	0.4463	35.516	134.43

## 12. Specifications

### General Data

Flow velocity range: 0.5 to 6 m/s (1.6 to 20 ft/s)  
Frequency output: 29 to 46 hz per m/s (9 to 14 hz per ft/s)  
(depending on pipe size)  
Linearity:  $\pm 1\%$  of full range  
Repeatability:  $\pm 0.5\%$  of full range  
Pipe size range: 13 to 305 mm (0.5 to 12 in.)  
Cable length: 7.6 m (25 ft), can splice to 60 m (200 ft.)  
with no significant degradation of signal strength  
Cable type: 150°C 22 AWG, 2-conductor w/shield

### Wetted Materials

Sensor body: ACI type CF-8M (316 cast stainless steel)  
per ASTM A351  
Rotor material: CD4MCu stainless steel  
Rotor pin: Tungsten Carbide GRP 1 (standard);  
316 stainless steel (optional)  
Retainers (2): 316 stainless steel  
Rotor bearings (2): Fluoroloy B®

### Electrical Data

Voltage output: Approximate sine wave, 0.005 to 0.008  
Vp-p per Hertz  
Coil resistance: 11.6 kW @ 25 °C  
Coil inductance: 3.5 Henrys @ 25 °C

### Quality Standards

- CE, FM
- Manufactured under ISO 9001

### Ambient Conditions

Maximum Pressure/Temperature Limitations:

- +GF+ SIGNET 525 Metalex Sensor with:
  - +GF+ SIGNET 526-1 Series Saddle Fitting:  
21 bar @ 66 °C (300 psi @ 150 °F)
  - +GF+ SIGNET 525 Metalex Sensor with:
    - +GF+ SIGNET 526-2 Series Tee or Mini-Tap Fitting:  
103 bar @ 149 °C (1500 psi @ 300 °F)

## +GF+ SIGNET

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P52590-1 (1-8/02) English

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# +GF+ SIGNET 8550-1 Flow Transmitter

ENGLISH



3-8550.090-1



G-4/03 English



## WARNING!

- Remove power to unit before wiring input and output connections.
- Follow instructions carefully to avoid personal injury.

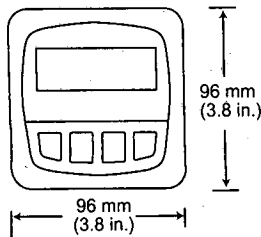
## Contents

1. Specifications
2. Installation
3. Electrical Connections
4. Menu Functions



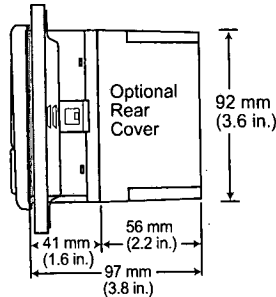
## 1. Specifications

### Dimensions



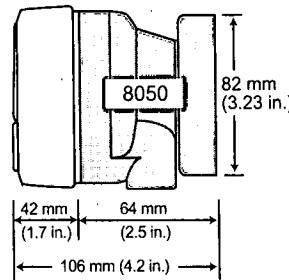
FRONT VIEW

Field Mount & Panel Mount



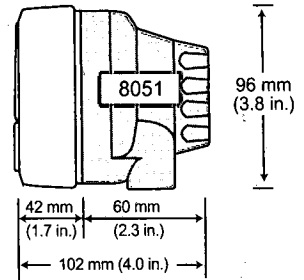
SIDE VIEW

Panel Mount



SIDE VIEW

Field Mount w/  
8050 Universal base



SIDE VIEW

Field Mount w/  
8051 Integral kit

### General

Compatibility: +GF+ SIGNET Flow Sensors (w/freq out)

### Enclosure:

- Rating: NEMA 4X/IP65 front
- Case: PBT
- Panel case gasket: Neoprene
- Window: Polyurethane coated polycarbonate
- Keypad: Sealed 4-key silicone rubber
- Weight: Approx. 325g (12 oz.)

### Display:

- Alphanumeric 2 x 16 LCD
- Update rate: 1 second
- Contrast: User selected, 5 levels
- Display accuracy:  $\pm 0.5\%$  of reading @ 25°C
- Thermal sensitivity shift:  $\pm 0.005\%$  of reading per °C

### Electrical

- Power: 12 to 24 VDC  $\pm 10\%$ , regulated, 61 mA max current

### Sensor Input:

- Range: 0.5 to 1500 Hz
- Sensor power: 2-wire: 1.5 mA @ 5 VDC  $\pm 1\%$   
3 or 4 wire: 20 mA @ 5 VDC  $\pm 1\%$
- Optically isolated from current loop
- Short circuit protected

### Current output:

- 4 to 20 mA, isolated, fully adjustable and reversible
- Max loop impedance: 50  $\Omega$  max. @ 12 V  
325  $\Omega$  max. @ 18 V  
600  $\Omega$  max. @ 24 V
- Update rate: 100 ms
- Accuracy:  $\pm 0.03$  mA

### Open-collector output, optically isolated:

- 50 mA max. sink, 30 VDC maximum pull-up voltage.
- Programmable for:
  - High or Low setpoint with adjustable hysteresis
  - Pulse operation (max rate: 300 pulses/min).

### 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
- Pollution degree: 2

### Standards and Approvals

- CSA, CE, UL listed
- Immunity: EN50082-2
- Emissions: EN55011 Class B
- Manufactured under ISO 9001 and ISO 14001

## 2. Installation

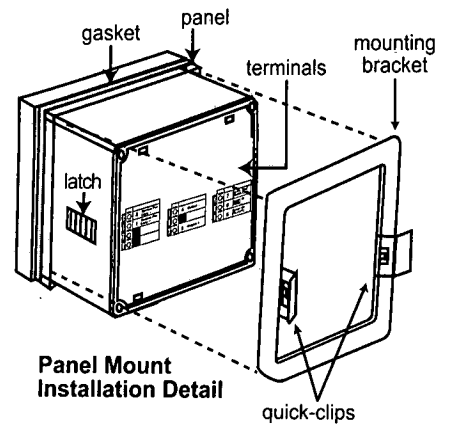
ProcessPro transmitters are available in two styles: panel mount and field mount. The panel mount is supplied with the necessary hardware to install the transmitter. This manual includes complete panel mounting instructions.

Field mounting requires one of two separate mounting kits. The 3-8051 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 3-8051 Integral kit or the 3-8050 Universal kit.

### 2.1 Panel Installation

1. The panel mount transmitter is designed for installation using a 1/4 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.



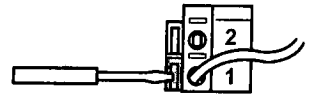
Press quick-clips outward and remove.

### 3. Electrical Connections

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

#### Wiring Procedure

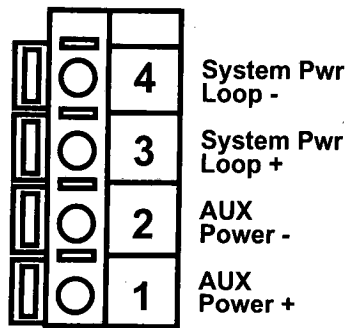
1. Remove 0.5 - 0.625 in. (13-16 mm) of insulation from wire end.
2. Press the orange terminal lever downward with a small screwdriver, to open terminal jaws.
3. Insert exposed (non-insulated) wire end in terminal hole until it bottoms out.
4. Release orange terminal lever to secure wire in place. Gently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



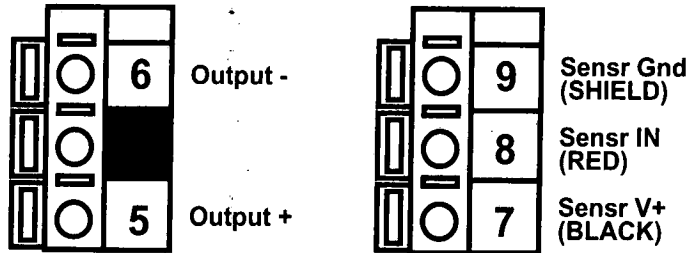
#### Wiring Removal Procedure

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

**Terminals 3 and 4: Loop Power**  
 12-24 VDC  $\pm 10\%$  system power and current loop output.  
 Max. loop impedance:  
 50  $\Omega$  max. @ 12 V  
 325  $\Omega$  max. @ 18 V  
 600  $\Omega$  max. @ 24 V

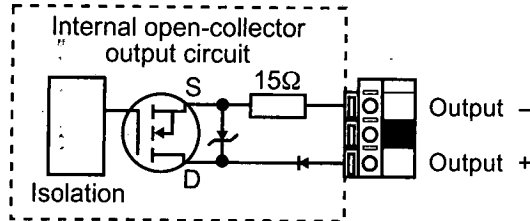


**Terminals 7-9: Flow sensor input**



**Terminals 1 and 2: AUXILIARY power**  
 Used only if the flow sensor requires more than 1.5 mA current. For Signet sensors this is limited to the following products:

- 2000 • 2507
- 2530 • 2535
- 2540 if mfg. prior to Jan 1999
- 7002 Vortex sensor



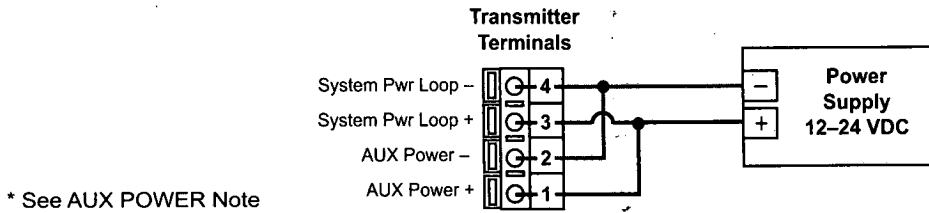
#### Terminals 5 and 6: Open-collector Output

A transistor output, programmable (see CALIBRATE menu) as:

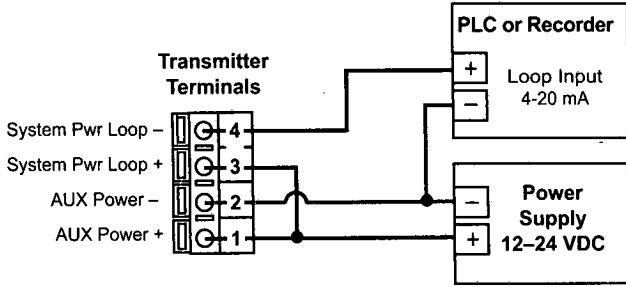
- High or Low setpoint with adjustable hysteresis
- Volumetric pulse
- Frequency based on flow rate
- May be disabled (Off) if not used.

### 3.1 System Power/Loop Connections

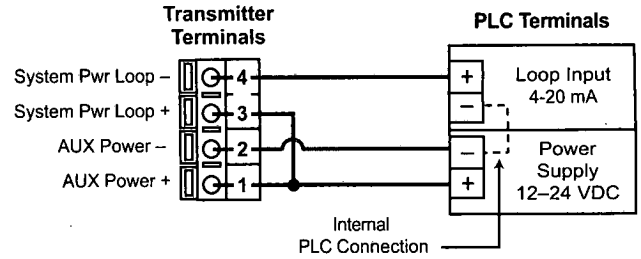
Stand-alone application, no current loop used



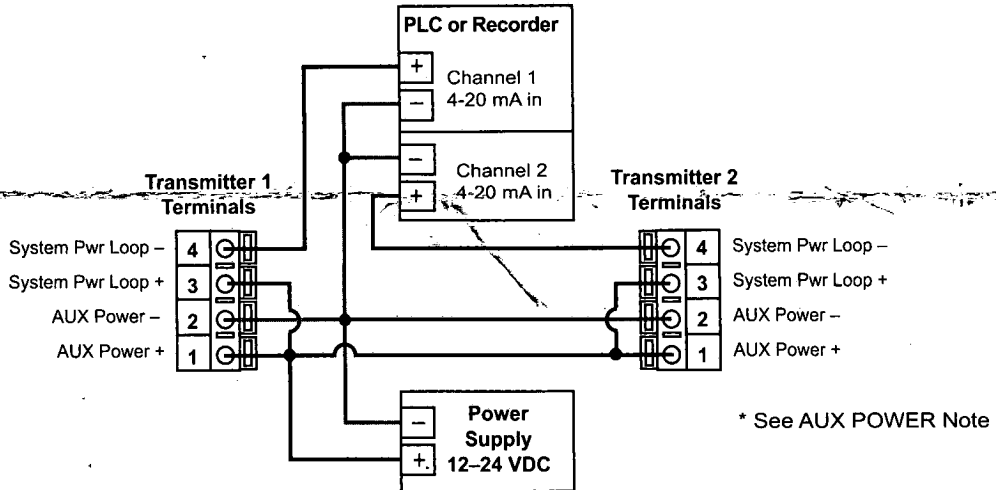
Connection to a PLC/Recorder, separate supply



Connection to a PLC with built-in power supply



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



#### Auxiliary Power note:

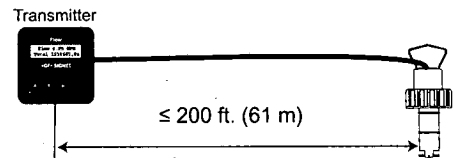
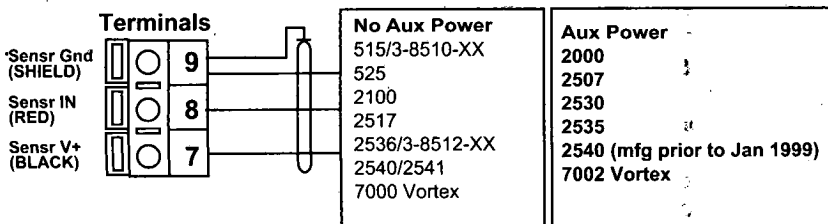
AUXILIARY power is used only if the flow sensor requires more than 1.5 mA current. For Signet sensors this is limited to the following products:

- 2000, 2507, 2530, 2535, 2540 if mfg. prior to Jan 1999, 7002 Vortex sensor

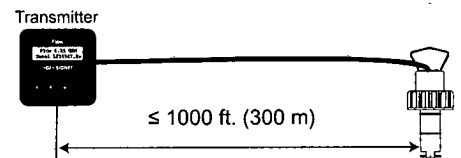
### 3.2 Sensor Input Connections

#### 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.



Maximum cable length is 200 ft. for 515/8510-XX, 525, 2517 and any sinusoidal flow signal.



Maximum cable length is 1000 ft. for 2536/8512-XX, 2540/2541, vortex, and any open collector flow signal.

### 3.3 Open Collector Output

The Open collector output can be used as a switch that responds when the flow rate moves above or below a setpoint, or it can be used to generate a pulse that is relative to the flow volume or to the flow rate.

- **Low**

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

- **High**

Output triggers when the flow rate is greater than the setpoint. The output will relax when the flow rate drops below the setpoint plus the hysteresis value.

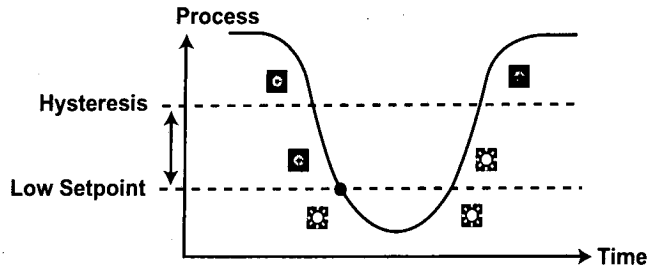
- **Frequency**

Output is a pulse stream that is based on the input flow sensor signal. Set for 1 (input frequency = output frequency). Set for even numbers (2, 4, 6, 8 . . . . 254 maximum) to scale output frequency.

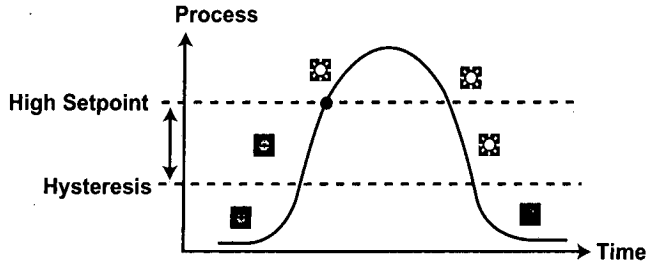
- **Pulse**

Output is a pulse based on the volume of fluid that passes the sensor. Set any value from 0.0001 to 99999.

The output may be disabled (Off) if not used.



Relay energized   
Relay relaxed 



## VIEW menu

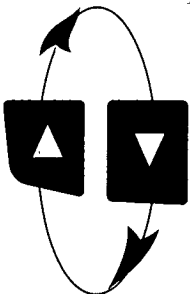
- During normal operation, the ProcessPro displays the VIEW menu.
- When using the CALIBRATE or OPTIONS menus, the ProcessPro will return to the VIEW menu if no activity occurs for 10 minutes.
- To select the item you want displayed, press the UP or DOWN arrow keys. The items will scroll in a continuous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



### View Menu

Display	Description
0.0 GPM Total: 12345678 >	Monitor the flow rate and the resettable totalizer. Press the RIGHT ARROW key to reset the totalizer. If the Reset is locked, you will need to enter the Key Code first. Lock or Unlock the totalizer in the OPTIONS menu. This is the permanent View display.
Perm: 12345678 Gallons	Monitor the Permanent Totalizer value.
Loop Output: 12.00 mA	Monitor the 4-20 mA Loop output.
Last CAL: 06-30-01	Monitor date for scheduled maintenance or date of last calibration. (See description in Calibrate Menu.)

All of the displays below are temporary. After ten minutes the display will return to the permanent display.



# 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.

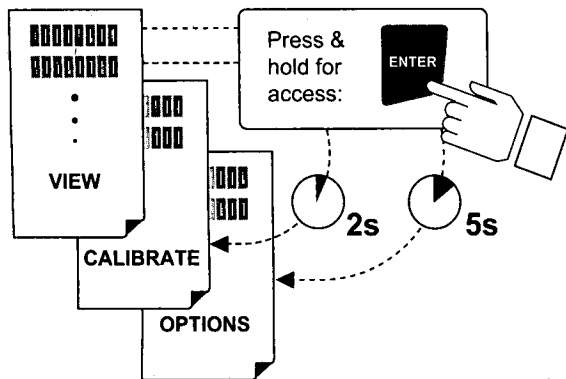
## Step 5. Press UP or DOWN keys to edit the flashing element.

- RIGHT ARROW key advances the flashing element.

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

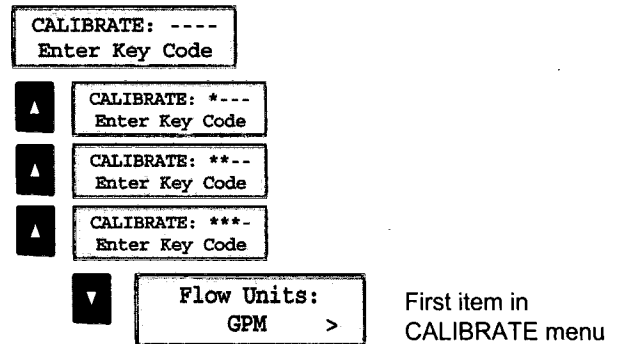
### Notes on Step 1:

- 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.

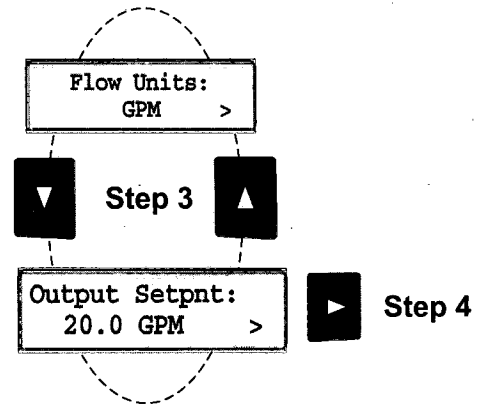


### Notes on Steps 3 and 4:

- 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.




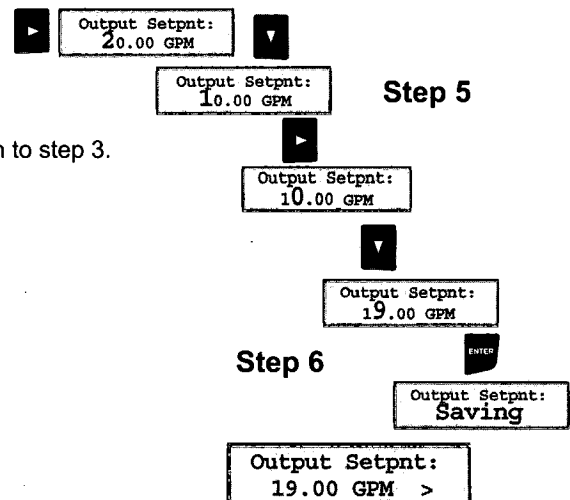
### Notes on Steps 5 and 6:

- 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.





## Calibrate Menu

Display (Factory settings shown)	Description
<b>Flow Units:</b>  <b>GPM</b> >	The first three characters set the Flow Rate units of measure. They have no effect on calculations. They may be any alpha or numeric character, upper or lower case. The last character sets the Flow rate Timebase. Select S (seconds), M (minutes), H (hours) or D (days).
<b>Flow K-Factor:</b>  <b>60</b> >	This setting tells the transmitter how to convert the input frequency from the flow sensor into a flow rate. The K-factor is unique to the sensor model and to the pipe size and schedule. Refer to data in the sensor manual for the correct value. Limits: 0.0001 to 99999. (The K-factor cannot be set to 0)
<b>Total Units:</b>  <b>Gallons</b> >	This setting identifies the Totalizer units. It has no effect on any calculation. It serves as a label only. Each character can be any alpha or numeric selection, upper or lower case.
<b>Total K-Factor</b>  <b>60</b> >	This setting tells the transmitter how to convert the input frequency from the flow sensor into a volumetric total. It also is used as the basis for the Open Collector pulse mode. The setting is usually the same as the Flow K-factor, or different by x10 or x100. Limits: 0.0001 to 99999. (The K-factor cannot be set to 0)
<b>Loop Range: GPM</b>  <b>000.00 → 100.00</b> >	Select the minimum and maximum values for the 4-20 mA Current loop output. The 8550 will allow any values from 0.0000 to 99999.
<b>Output Mode:</b>  <b>Low</b> >	Select the desired mode of operation for the Open Collector output. Options available are High, Low, volumetric Pulse, or Frequency. The signal may be disabled (Off) if not used.
<b>Output Setpnt:</b>  <b>10.0 GPM</b> >	In Low or High Mode, the Open Collector output will be activated when the Flow rate reaches this value. Be sure to modify this setting if you change the Flow Units.
<b>Output Hys:</b>  <b>5.0 GPM</b> >	The Open Collector output will be deactivated at Setpoint ± Hysteresis, depending on High or Low Setpoint selection. (See details on page 4.)
<b>Output Volume:</b>  <b>100.00 Gallons</b> >	In Pulse mode, the Open collector output will generate one pulse when this volume of flow passes the sensor. The measurement is based on the Total K-factor. The 8550 will allow any value from 0.0001 to 99999.
<b>Output PlsWdth:</b>  <b>0.1 Seconds</b> >	In Pulse mode, this setting defines the duration of the Open Collector output pulse. The 8550 allows any value from 0.1 seconds to 999.9 seconds.
<b>Output Freq.:</b> <b>Divide by</b> <b>1</b> >	In Frequency mode, the Open Collector output will simulate the sensor frequency, divided by this setting. Set for 1 (input frequency = output frequency). Set for even numbers (2, 4, 6, 8 . . . 254 maximum) to scale output frequency.
<b>Last CAL:</b>  <b>6-30-01</b>	Use this "note pad" to record important dates, such as annual recertification or scheduled maintenance.

## Options Menu

Display (Factory settings shown)	Description
<b>Contrast:</b> 3 >	Adjust the LCD contrast for best viewing. A setting of 1 is lower contrast, 5 is higher. Select lower contrast if the display is in warmer ambient surroundings.
<b>Flow Decimal</b> ***** >	Set the decimal to the best resolution for your application. The display will automatically scale up to this restriction. Select ***** , ***** , ***** , ***** or *****
<b>Total Decimal</b> ***** >	Set the totalizer decimal to the best resolution for your application. Select ***** , ***** , or *****
<b>Averaging:</b> Off >	OFF provides the quickest output response to changes in flow. LOW averaging = 4 seconds, HIGH averaging = 8 seconds of input signal. Longer averaging produces more stable display and output response.
<b>Total Reset:</b> Lock Off >	Lock Off : No key code required to reset the resettable totalizer. Lock On : The Key Code must be entered to reset the resettable totalizer.
<b>Loop Adjust:</b> 4.00 mA >	Adjust the minimum and maximum current output. 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 Use this setting to match the system output to any external device.
<b>Loop Adjust:</b> 20.00 mA >	
<b>Output Active:</b> 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.
<b>Test Loop:</b> >	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.
<b>Test Output:</b> >	Press UP or DOWN keys to manually toggle the state of open collector output.

## Troubleshooting

Display Condition	Possible Causes	Suggested Solutions
"- - - -"	Flow rate exceeds display capability	<ul style="list-style-type: none"> <li>• Increase Flow units time base</li> <li>• Move flow decimal one place to the right</li> </ul>
"Pulse Overrun"	<ul style="list-style-type: none"> <li>• Open Collector pulse rate exceeds maximum of 300 pulses per minute.</li> <li>• Pulse width set too wide.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase Pulse volume setting</li> <li>• Decrease pulse width setting.</li> <li>• Reduce system flow rate</li> </ul>
"Value must be more than 0"	K-factors cannot be set to 0.	Enter K-factor from 0.0001 to 99999
Open Collector is always activated	<ul style="list-style-type: none"> <li>• Hysteresis value too large</li> <li>• Defective transmitter</li> </ul>	<ul style="list-style-type: none"> <li>• Change the hysteresis value</li> <li>• Replace transmitter</li> </ul>

## Ordering Information

Mfr. Part No.	Code	Description
3-8550-1	159 000 047	Flow transmitter, Field mount
3-8550-1P	159 000 048	Flow transmitter, Panel mount
3-8550-2	159 000 049	Flow transmitter, Field mount with relays
3-8550-2P	159 000 050	Flow transmitter, Panel mount with relays
3-8550-3	159 000 051	Flow transmitter, Field mount with dual input/output
3-8550-3P	159 000 052	Flow transmitter, Panel mount with dual input/output

## Accessories

Mfr. Part No.	Code	Description
3-8050	159 000 184	Universal mounting kit
3-8051	159 000 187	Flow Integral Mnt NPT
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
3-5000.399	198 840 224	5 x 5 inch adapter plate for +GF+ SIGNET retrofit
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)
7300-7524	159 000 687	24 VDC Power Supply 7.5 W, 300mA
7300-1524	159 000 688	24 VDC Power Supply 15 W, 600mA
7300-3024	159 000 689	24 VDC Power Supply 30 W, 1.3 A
7300-5024	159 000 690	24 VDC Power Supply 50 W, 2.1 A
7300-1024	159 000 691	24 VDC Power Supply 100 W, 4.2 A

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