Signet 2537 Paddlewheel Flowmeter

3-2537.090   Rev B 08/06   English

SAFETY INSTRUCTIONS
1. Depressurize and vent system prior to installation or removal.
2. Confirm chemical compatibility before use.
3. Do not exceed maximum temperature/pressure specifications.
4. Wear safety goggles or faceshield during installation/service.
5. Do not alter product construction
6. If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
7. **This device is not approved for use or installation in hazardous locations.**

Description

The 2537 Paddlewheel Flowmeter Series offer low flow, low power and high resolution with various output options such as a flow switch, pulse divider, Digital (S^3L), or 4-20 mA. This unit can be configured on-site directly through the built-in user interface.
- The Digital model provides a digital (S^3L) output for use with the Signet 8900 Multi-Parameter Controller.
- The 4-20 mA model provides a blind current loop output.
- The Flow Switch Model uses a single relay (mechanical or solid state) for Hi or Lo alarm operation.
- The Pulse model uses a single relay (mechanical or solid state) and has two selectable operating modes:
  - The Divider mode scales the paddlewheel frequency down to accommodate low frequency input devices.
  - In Total mode, the Pulse Model becomes a traditional pump pulser, able to output one pulse per a set volume of fluid.

A small LCD enables the 2537 to be programmed without any external equipment. During normal operation the display is not visible.

Specifications

General

Wetted Materials

Model Suffix	Sensor Body	Rotor	Pin	O-ring
-P0, -P1	glass-filled PP	PVDF, Black	Titanium	FPM
-T0	PVDF, Natural	PVDF, Natural	PVDF, Natural	FPM

Case: PBT, yellow
Inside cover: Valox, black
Wiring ports   ½ in. NPT threads; liquid-tight connector accepts cables 7-10 mm od (0.275-0.394 in.)

Power requirements

Pulse, Flow Switch
With dry-contact relay: 24 VDC nominal
                           (21.6 VDC min. to 26.4 VDC max.)
                           30 mA max current
With solid-state relay: 5 to 24 VDC nominal
                           (5.0 VDC min to 26.4 VDC max.)
                           30 mA max current
Digital (S^3L):   5 VDC nominal
                           (5.0 VDC min to 6.5 VDC max.)
                           30 mA max current (1.5 mA nominal)
4-20 mA: 12 VDC to 32 VDC nominal
                           (10.8 VDC min to 35.2 VDC max.)
                           400 mV max ripple voltage
                           30 mA max current
Reverse Polarity and short circuit protected: Up to 40V, 1 hour
Over-voltage protection: +60 VDC, -50 VDC

Paddlewheel sensor performance specifications

Pipe Size Range: DN15 to DN 200 (½ in. to 8 in.)
Min. Reynolds Number: 4500
Paddlewheel Frequency: 49 Hz per m/s nominal
                       (15 Hz per ft/s nominal)
Operating Range: 0.1 m/s to 6 m/s (0.3 ft/s to 20 ft/s)
Linearity: ±1% of max. range @ 25°C (77°F)
Repeatability   ±0.5% of max. range @ 25°C (77°F)

Electronics performance specifications

Input Frequency Range: 1 Hz to 1000 Hz
System Response: 100 ms update rate nominal

Environmental Requirements

Enclosure rating: NEMA 4X/IP65
Storage Temperature: -10°C to 75°C
Ambient Temperature: 0°C to 65°C
Relative Humidity: 0 to 90% RH, non-condensing
Altitude: 2000 m (6562 ft.)
Pollution Degree: 2

Output specifications

Signal Averaging: Programmable 0 to 100 seconds
Sensitivity Response: Programmable 0 to 9 scale

Pulse divider/Total pulse output

Pulse Divider Setting: 1.0000 to 99999
                         Maximum pulse rate: 300 Hz
                         Maximum pulse width: 50 ms

Flow switch output

Relay Modes: Low, High
Time Delay: 0.0 to 6400.0 seconds
Hysteresis: Adjustable in Engineering Units

Relay Specifications

Mechanical SPDT: 5A @ 30 VDC, 5A @ 250VAC
Solid-State Relay: 100mA @ 40VDC, 70 mA @ 33 VAC

Digital (S^3L) output

Type: Serial ASCII, TTL level 9600 bps
Maximum cable length: See S^3L specifications

Current output (Passive 4 to 20 mA)

Loop Accuracy: ±32 µA (@ 25°C @ 24 VDC)
Loop resolution: 5 µA
Temp. drift: ±1 µA per °C max.
Power supply rejection: ±1 uA per V
Maximum cable: 300 m (1000 ft.)
Max Loop Resistance: 600Ω @ 24 VDC, 1KΩ @ 32 VDC

Standards & Approvals

- UL
- CE
- EN61326: Immunity and Emissions for Control Equipment
- EN61010: Safety requirements for electrical equipment

George Fischer Signet, Inc. maintains an ISO 9001 Quality System and an ISO 14001 Environmental System

Fluid Conditions

Pressure/Temperature Ratings:
Polypropylene Body:
• 12.5 bar (180 psi) max. @ 20 °C (68 °F)
• 1.7 bar (25 psi) max. @ 85 °C (185 °F)
PVDF Body:
• 14 bar (200 psi) max @ 20 °C (68 °F)
• 1.7 bar (25 psi) max @ 85 °C (185 °F)

Intended Use: This product is intended for use in industrial water treatment and waste water treatment applications where the chemical content and the fluid temperatures are consistent with the specifications listed herein.
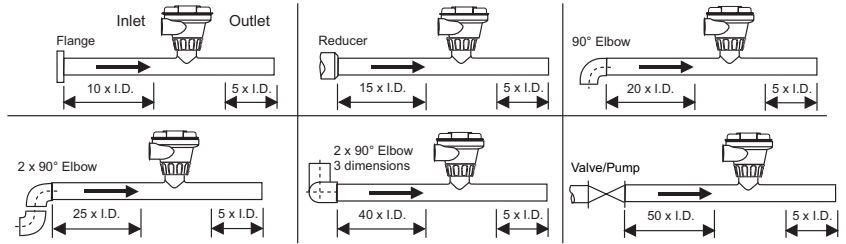**This device is not approved for use or installation in flammable liquids.**
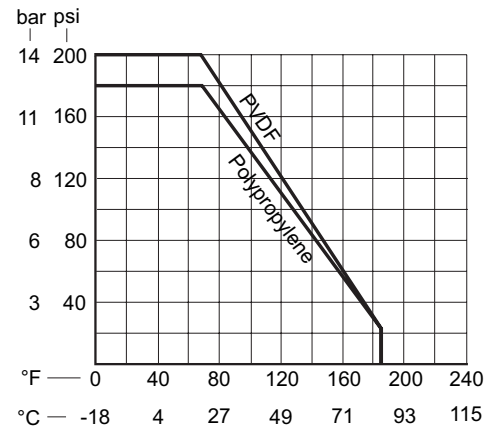
Location of Fitting

Recommended sensor upstream/downstream mounting requirements

Select a location with sufficient length of straight pipe immediately upstream of the sensor.

Locating the sensor in a trap or where the flow is upward helps to protect the sensor from exposure to air bubbles when the system is in operation.

O.K.　　O.K.　　O.K.

Vertical flow is OK IF the pipe remains full at all times.
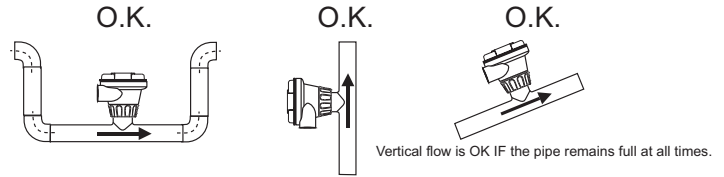
These configurations are not recommended because it is difficult to keep the pipe full.
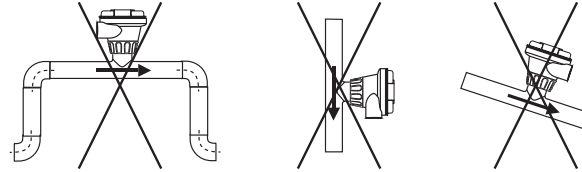
Sensor Mounting Position

• Horizontal pipe runs: Mount sensor in the upright (0°) position for best performance. Mount at a maximum of 45° when air bubbles are present (pipe must be full). Do not mount on the bottom of the pipe when sediments are present.

• Vertical pipe runs: Mount sensor in any orientation, however, downward flow is not recomended. Upward flow is preferred to ensure full pipe.
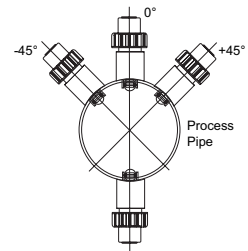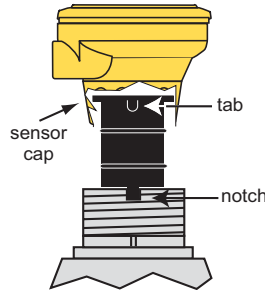

Installation: Pipe fittings

George Fischer Signet offers a wide selection of installation fittings that control the position of the paddlewheel in relation to the dimensions of the pipe.

Type		Description
Plastic tees		• 0.5 to 4 inch versions • PVC or CPVC
Metric Union Fitting		• For pipes from DN 15 to 50 mm • PP or PVDF
PVC Saddles		• 2 to 4 inch, cut 1-7/16 inch hole in pipe • 6 to 8 inch, cut 2-1/8 inch hole in pipe
Iron Strap-on saddles		• 2 to 4 inch, cut 1-7/16 inch hole in pipe • Over 4 inch, cut 2-1/8 inch hole in pipe

Type		Description
Iron, Carbon Steel, 316 SS Threaded tees		• 0.5 to 2 inch versions • Mounts on threaded pipe ends
Carbon steel & stainless steel Weld-on Weldolets		• 2 to 4 inch, cut 1-7/16 inch hole in pipe • Over 4 inch, cut 2-1/8 inch hole in pipe
Fiberglass tees & saddles: FPT　FPS		• 1.5 inch to 8 in. PVDF insert • > 8 inch PVC insert
Metric Wafer Fitting		• For pipes DN 65 to 200 mm • PP or PVDF

3. Installation
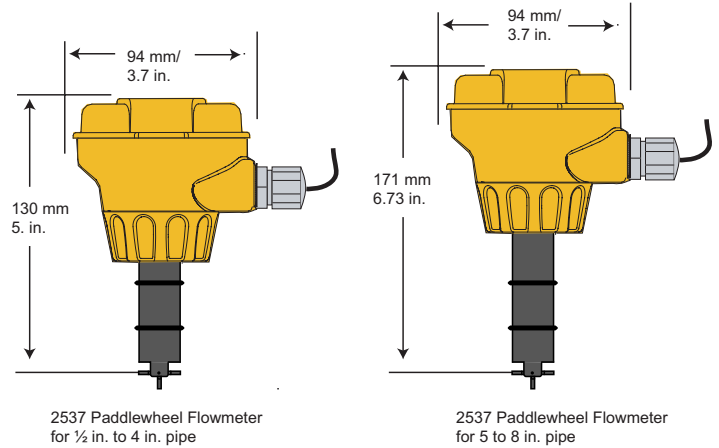
3.3 Plastic sensor installation tips

- Inspect the sensor O-rings for nicks and other damage that may compromise the seal.
- Lubricate the sensor O-rings with a suitable lubricant before each installation. Do not use any petroleum based lubricant, which can attack the O-rings.
- Using an alternating/twisting motion, lower the sensor into the fitting, making sure the conduit ports on the yellow housing are pointing in the direction of flow.
- Engage one thread of the sensor cap then turn the sensor until the alignment tab is seated in the fitting notch.
- Hand tighten the sensor cap.

 **DO NOT USE ANY TOOLS ON THE SENSOR CAP.**

Dimensions

2537 Paddlewheel Flowmeter for ½ in. to 4 in. pipe

2537 Paddlewheel Flowmeter for 5 to 8 in. pipe

Wiring

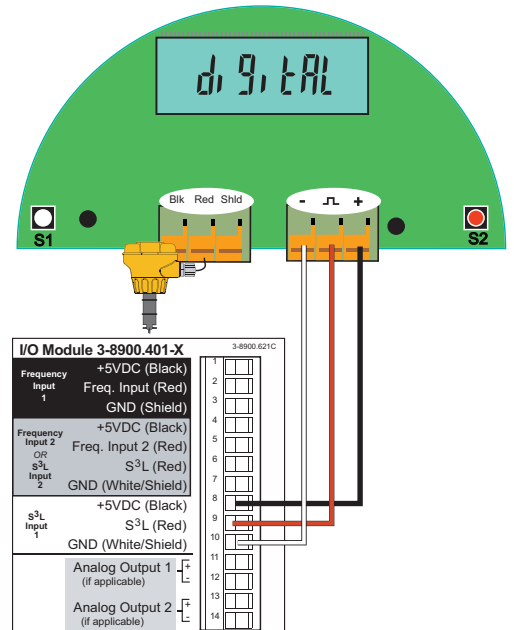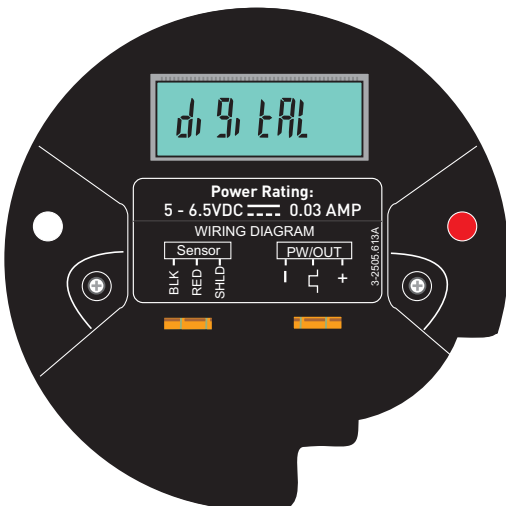Electrical connections to this product should be made only by qualified personnel.

To access the wiring terminals:
- Turn yellow cap ¼ turn counterclockwise to remove.
- Remove the two retaining screws and remove the black cover.
- Route all cables through the conduit ports before connecting them to the terminals.
- Wiring terminals are rated for 16-22 AWG conductors.
- The cable must be 7 to 10 mm in diameter (0.275 to 0.394 in.) to seal properly in the liquid tight connector.
- The conduit ports have ½ inch NPT threads. After routing the cables, seal the port with a liquid tight conduit connector (3-9000.392-1) or with conduit.
- For conduit installations:
  - Thread conduit with ½ in. NPT threads directly into the conduit port.
  - For conduit with ISO threads, use the black thread adapter included with the connector kit.
  - To comply with NEC requirements, do not use any metal conduit in the installation.

Using the liquid-tight connector

Using conduit
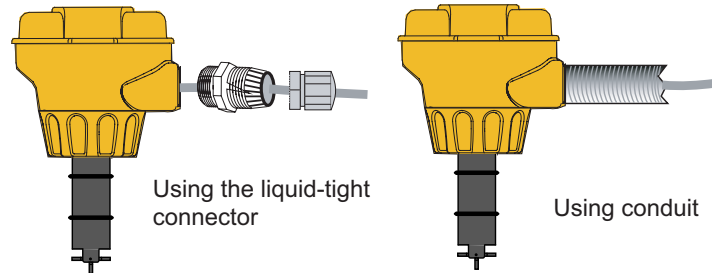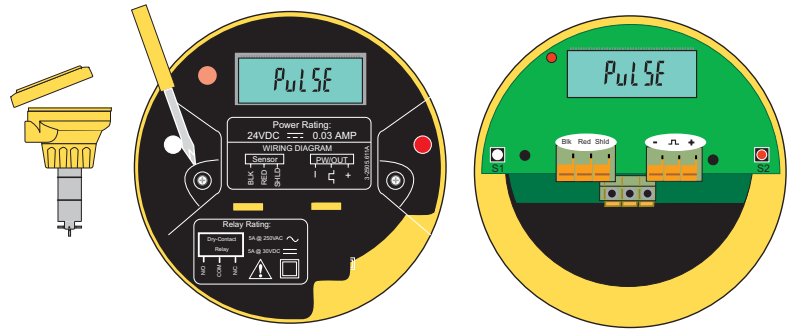
Wiring: Digital (S³L) Output

The Digital (S³L) output is compatible with the 3-8900 Multi-Parameter Controller.

Power Rating:
5 - 6.5VDC ⎓ 0.03 AMP

WIRING DIAGRAM

I/O Module 3-8900.401-X		3-8900.621C
Frequency Input 1	+5VDC (Black)	1
	Freq. Input (Red)	2
	GND (Shield)	3
Frequency Input 2 OR **S³L Input 2**	+5VDC (Black)	4
	Freq. Input 2 (Red)	5
	S³L (Red)	6
	GND (White/Shield)	7
S³L Input 1	+5VDC (Black)	8
	S³L (Red)	9
	GND (White/Shield)	10
	Analog Output 1 (if applicable)	11 / 12
	Analog Output 2 (if applicable)	13 / 14

Wiring: 4-20 mA Output

The 4-20 mA output can be connected to Chart Recorders, PLCs or any device that requires a 4-20 mA signal.
The 4-20 mA model requires an external power source of 12-32 VDC.

Power Rating:
12 - 32VDC ⎓ 0.03 AMP
WIRING DIAGRAM
Sensor   PW/OUT
BLK RED SHLD   - ⊓ +
3-2505.614A

Blk Red Shld   - ⊓ +
S1   S2

Internal sensor connections

Programmable Logic Controller
Datalogger
Chart Recorder
4-20 mA Loop monitor
+ | −

+ Power Supply
- 12-32 VDC, 0.03 A
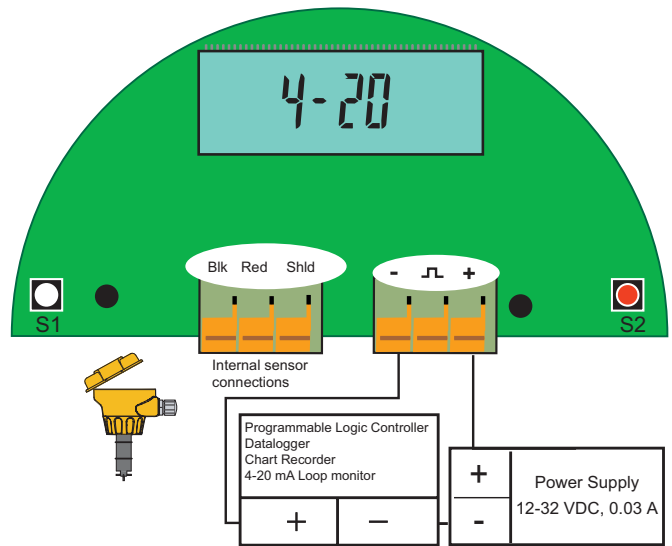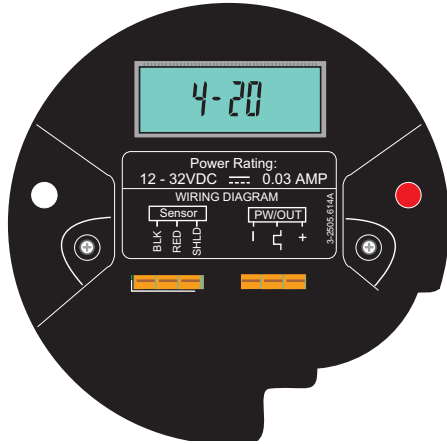
Wiring: Flow Switch Output (On-Off)

- The Flow Switch models provide a single relay that is programmable as a HIGH setpoint or LOW setpoint.
- The relay may be a dry-contact type or a solid state type.
- The dry contact relay requires an external power source of 24 VDC ± 10%.
- The solid state relay requires an external power source of 5 to 24 VDC.

On-OFF
Power Rating:
24VDC ⎓ 0.03 AMP
WIRING DIAGRAM
Sensor   PW/OUT
BLK RED SHLD   - ⊓ +
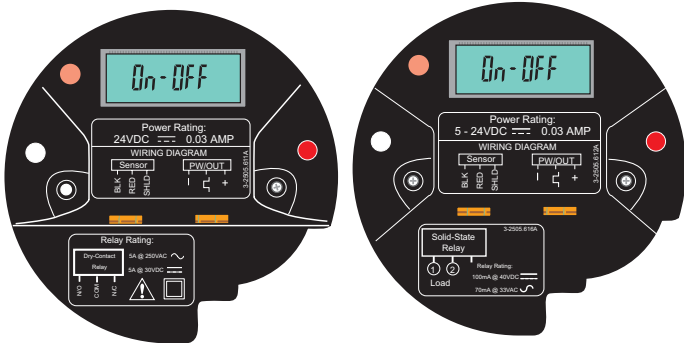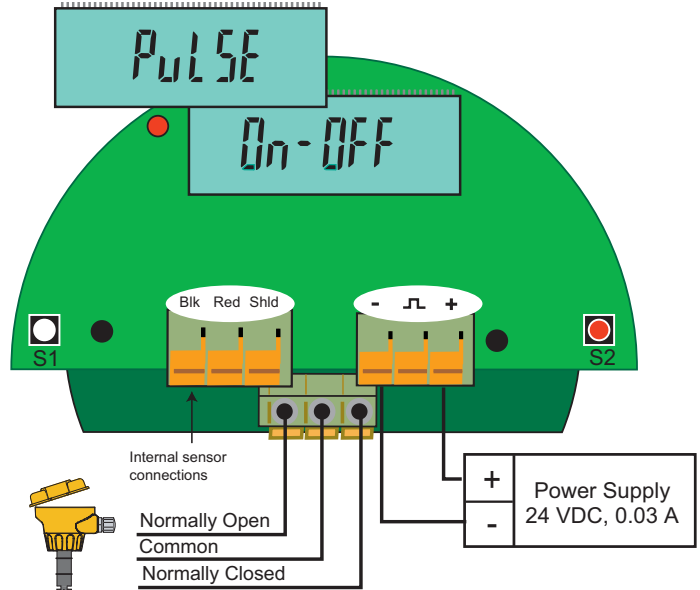Relay Rating:
Dry-Contact 5A @ 250VAC ∿
Relay 5A @ 30VDC ⎓
N/O COM N/C

On-OFF
Power Rating:
5 - 24VDC ⎓ 0.03 AMP
WIRING DIAGRAM
Sensor   PW/OUT
BLK RED SHLD   - ⊓ +
Solid-State Relay
① ②
Load   Relay Rating:
100mA @ 40VDC ⎓
70mA @ 33VAC ∿

Wiring: Pulse Output

- The Pulse model provides a single relay that is programmable as a Volumetric pulse output or as a simple pulse divider output.
- The relay may be a dry-contact type or a solid state type.
- The dry contact relay requires an external power source of 24 VDC ± 10%.
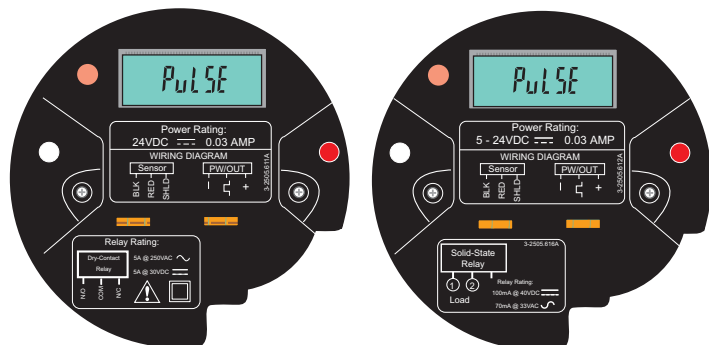- The solid state relay requires an external power source of 5 to 24 VDC.

PuLSE
Power Rating:
24VDC ⎓ 0.03 AMP
WIRING DIAGRAM
Sensor   PW/OUT
BLK RED SHLD   - ⊓ +
Relay Rating:
Dry-Contact 5A @ 250VAC ∿
Relay 5A @ 30VDC ⎓
N/O COM N/O

PuLSE
Power Rating:
5 - 24VDC ⎓ 0.03 AMP
WIRING DIAGRAM
Sensor   PW/OUT
BLK RED SHLD   - ⊓ +
Solid-State Relay
① ②
Load   Relay Rating:
100mA @ 40VDC ⎓
70mA @ 33VAC ∿

Dry Contact Relay Wiring

- The wiring is identical for On-Off and Pulse models.

PuLSE
On-OFF

Blk Red Shld   - ⊓ +
S1   S2

Internal sensor connections

Normally Open
Common
Normally Closed

+ Power Supply
- 24 VDC, 0.03 A

Solid State Relay Wiring

- The wiring is identical for On-Off and Pulse models.

On-OFF
PuLSE

Blk Red Shld   - ⊓ +
S1   S2

Load ①
      ②
No Connection

+ Power Supply
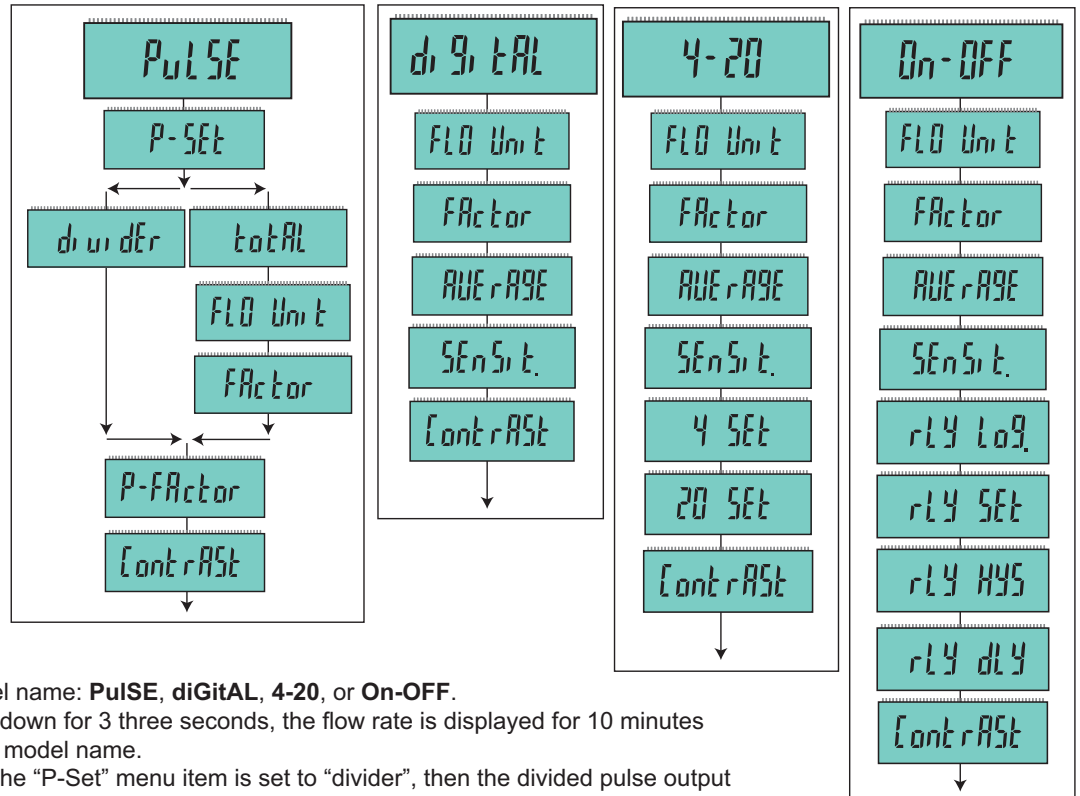- 5-24 VDC, 0.03 A

+GF+
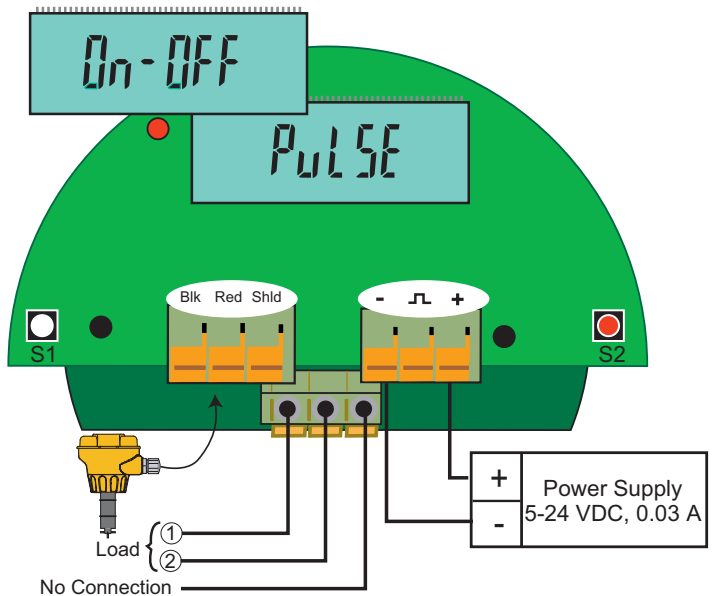
Operation

The 2537 Flowmeter is available in 4 different models. The programming menus vary significantly from one model to another.

This chart is provided inside the yellow cover to assist in navigating the menus in the 2537.

MODE	☛	☛	☛
VIEW	⟳2s → Display Flow Rate	⟳2s → Go to MENU	Go to VIEW
MENU	1X → Next Menu	1X → Display Current Val	Previous MODE
		⟳2s → Go to EDIT	Previous MODE
EDIT	1X → Increment Value	1X → Shift digit to right	Previous MODE
		⟳2s → Go to SAVE	Previous MODE
SAVE	1X → Toggle	1X → Store Change	N/A

This table shows the menu sequence for each model.

PuISE → P-SEt → (diuidEr ↔ totAL) → FLO Unit → FActor → P-FActor → ContrASt

diGitAL → FLO Unit → FActor → AUErA9E → SEnSit. → ContrASt

4-20 → FLO Unit → FActor → AUErA9E → SEnSit. → 4 SEt → 20 SEt → ContrASt

On-OFF → FLO Unit → FActor → AUErA9E → SEnSit. → rLY Lo9. → rLY SEt → rLY HYS → rLY dLY → ContrASt
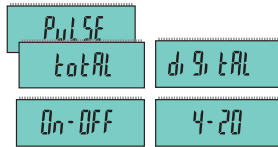
View Mode Function

• All models display the model name: **PuISE**, **diGitAL**, **4-20**, or **On-OFF**.
• If the white key (S1) is held down for 3 three seconds, the flow rate is displayed for 10 minutes before reverting back to the model name.
  • In the **PuISE** Model, if the "P-Set" menu item is set to "divider", then the divided pulse output will be displayed in pulses/seconds, (p/s).

This table shows the definition of each menu function, the setting parameters and the page where detailed instructions can be located.
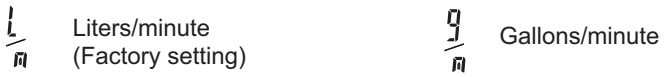
Menu Function	Definition	Setting Parameters	More Information On
Flow Unit	Liters or Gallons per sec, min, hour or day	See list on page 6	page 6
(K)Factor	Set PULSES per VOLUME UNIT	0.0001 to 999999	page 6
Average	Smooths out erratic flow conditions	0 to 100 seconds	page 7
Sensitivity	Overrides Average for large rate changes	0 to 9	page 7
P-Set	Select the mode for the PULSE OUT	Total or Divider	page 8
P-Factor	As PULSE **DIVIDER**, divides input freq.	1.0000 to 99999	page 8
P-Factor	As PULSE **TOTAL**, multiplies K-Factor	1.0000 to 99999	page 8
Relay Logic	Select Hi alarm or Lo alarm mode	Hi or Lo	page 9
Relay Set	Set Relay Setpoint	0.0000 to 99999	page 9
Relay Hysteresis	Rate inside Setpoint to DEENERGIZE relay	0.0000 to 99999	page 9
Relay Delay	Time delay before relay is ENERGIZED	0000.0 to 6400.0	page 9
4 Set	Set flow RATE to be represented by 4 mA	0.0000 to 99999	page 6
20 Set	Set flow RATE to be represented by 20 mA	0.0000 to 99999	page 6
Contrast	Adjust visibility of liquid crystal display	1 to 3	page 6

Flow Units
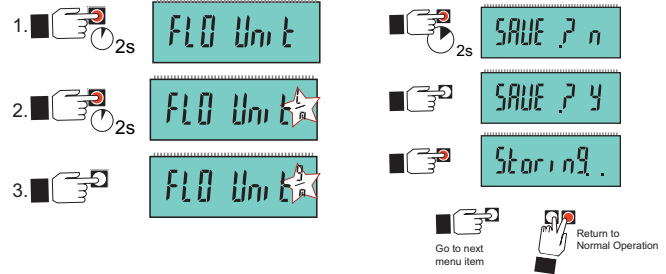
This function is available on these versions of the 2537.

PuLSE	
totAL	di9itAL
On-OFF	4-20

Select the volumetric units for the flow measurement.

$\frac{L}{S}$	Liters/second	$\frac{9}{5}$	Gallons/second
$\frac{L}{m}$	Liters/minute (Factory setting)	$\frac{9}{m}$	Gallons/minute
$\frac{L}{h}$	Liters/hour	$\frac{9}{h}$	Gallons/hour
$\frac{L}{d}$	Liters/day	$\frac{9}{d}$	Gallons/day

Example: Set the Flow Units to Gallons per minute:

Save the new setting:

1. ◼👉⏱2s FLO Unit
2. ◼👉⏱2s FLO Unit ☆
3. ◼👉 FLO Unit ☆

◼👉⏱2s SAUE ? n
◼👉 SAUE ? y
◼👉 Stor in9 .

◼👉 Go to next menu item   👆 Return to Normal Operation

K-Factor

This function is available on these versions of the 2537.

PuLSE	
totAL	di9itAL
On-OFF	4-20
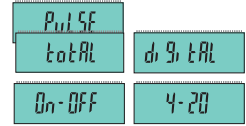
The factory setting is 60.0000.
Locate the K-factor in the tables on page 10.

	FActor
Minimum value	0.0001
Maximum value	999999

Example: Set the K-Factor to 63.5 Pulses per Gallon:

1. ◼👉⏱2s FLO Unit
2. ◼👉 FActor
3. ◼👉⏱2s ◄60.0000

Save the new setting:

4. ◼👉 x2 060.000
5. ◼👉 x3 063.000
6. ◼👉 063.000
7. ◼👉 x5 063.500

◼👉⏱2s SAUE ? n
◼👉 SAUE ? y
◼👉 Stor in9 .

◼👉 Go to next menu item   👆 Return to Normal Operation
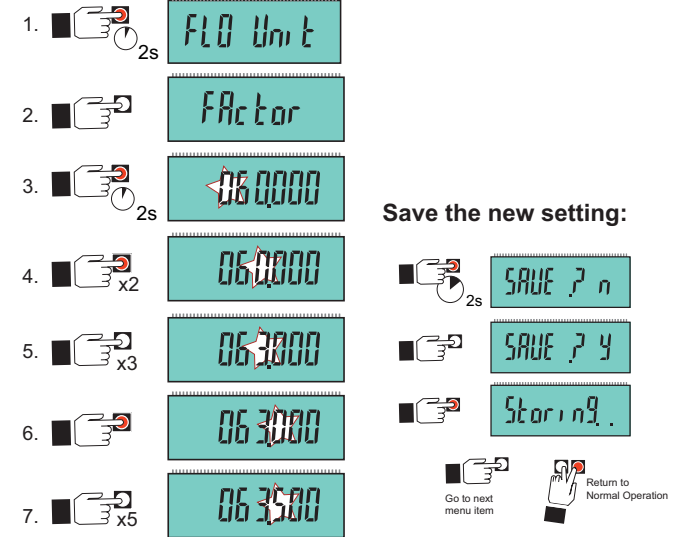
Set 4 and Set 20

This function is available on these versions of the 2537.

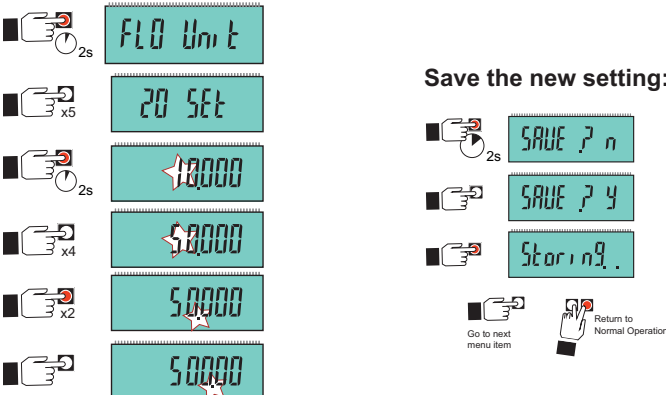| ~~PuLSE~~	~~di9itAL~~
~~On-OFF~~	4-20
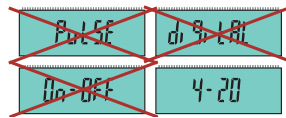
These two functions are used to span the 4-20 mA output signal to the required range.
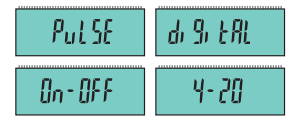The factory setting is 4-20 mA = 0 to 10.000

Only the 20 mA span is illustrated here.
Example: Set 20 mA = 500 GPM.

◼👉⏱2s FLO Unit
◼👉 x5 20 SEt
◼👉⏱2s ◄10.000
◼👉 x4 ☆0.000
◼👉 x2 50.000
◼👉 50.000 ☆

Save the new setting:

◼👉⏱2s SAUE ? n
◼👉 SAUE ? y
◼👉 Stor in9 .

◼👉 Go to next menu item   👆 Return to Normal Operation

Set Contrast

This function is available on these versions of the 2537.

PuLSE	di9itAL
On-OFF	4-20

All models of the 2537 have the CONTRAST adjustment. It is always located at the end of the menu.

1. ◼👉⏱2s
2. ◼👉 x1

Repeat until ⋮

ContrASt

To access the adjustment, enter the menu and scroll until the Contrast display appears.

There are three levels of adjustment. The factory setting of 3 is the highest contrast setting.

Choose:

1	OR	2	OR	3

Save the new setting:

◼👉⏱2s SAUE ? n
◼👉 SAUE ? y
◼👉 Stor in9 .

◼👉 Go to next menu item   👆 Return to Normal Operation
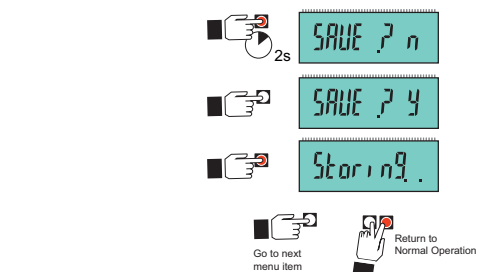
Averaging and Sensitivity Settings

- Because ideal flow conditions are often impossible to achieve, the flow rate is often erratic, which causes any control features (ie; relays, 4-20 mA loops, etc.) that are associated with the flow rate to be erratic.
- The best solution to these problems is to correct any piping deficiency that causes the instability. This may involve longer straight runs upstream, reducing the pipe size to maintain a full pipe at all times, and other installation changes. But in many situations these measures are simply not possible.
- The 2537 meter provides two tools that are designed to "work around" these deficiencies. The Averaging and the Sensitivity features should be studied before making adjustments.

Averaging Time in Seconds (Factory set: 0 seconds)

- Set the time the meter will use as the averaging period. The range is from 0 (no average applied to input) to 100 (seconds of averaging applied to input).
  Use higher averaging times to smooth the display and current output where the flow in the pipe is erratic.

Quick Response Sensitivity (Factory set: 0)

- Set the relative degree of change in the flow rate required to allow the 2537 to disable the AVERAGING and jump to a new flow rate immediately. The scale is from 0 (Least sensitive, averaging is never disabled.) to 9 (a very small change in flow rate will disable the averaging).

---

▪ ▪ ▪ ▪ ▪ No AVERAGING, no SENSITIVITY

With AVERAGING set to 0 (zero) and with SENSITIVITY set to zero, the 2537 responds to every unstable shift in the flow. The dashed red line represents the actual output of the flow sensor in unstable flow conditions.

▪▪▪▪▪▪▪▪▪ AVERAGING only

With AVERAGING set to 50 seconds and SENSITIVITY still set to zero the flow rate is stabilized, but a sharp change in flow rate is not represented for 50 seconds or longer. (dotted green line).

▬▬▬ AVERAGING and SENSITIVITY

With AVERAGING at 50 seconds and SENSITIVITY set to 4 OR 5, the flow rate is stabilized, while the sudden shift in flow is reflected very quickly. (Solid blue line)

2 s   10 s   20 s   30 s   40 s   50 s   60 s   70 s
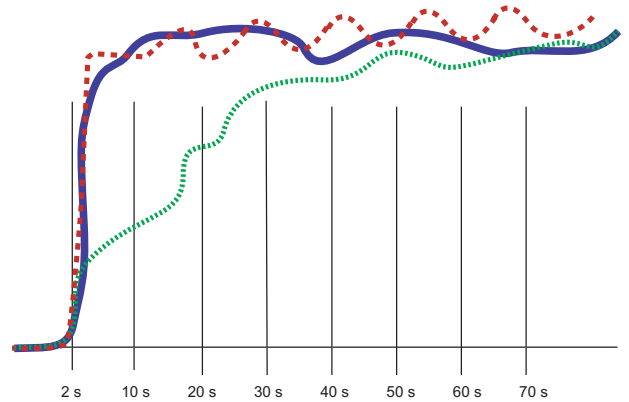
NOTE: The SENSITIVITY function is ineffective if the AVERAGING function is set to zero (seconds).

Set Averaging

This function is available on these versions of the 2537:

~~PULSE~~ | diGITAL
On-OFF | 4-20

The factory setting is 0 (zero).

AUErAGE

Minimum value → 000 s

Maximum value → 100 s

Example:
Set the Averaging for 50 seconds.

1. [press 2s] FLO Unit
2. [press x2] AUErAGE
3. [press 2s] 000 s
4. [press] 600 s
5. [press x5] 650 s

Save the new setting:

[press 2s] SAUE ? n
[press] SAUE ? Y
[press] StoriNG.

[press] Go to next menu item
[press] Return to Normal Operation

Set Sensitivity

This function is available on these versions of the 2537:

~~PULSE~~ | diGITAL
On-OFF | 4-20

The factory setting is 0 (zero).

SEnSit.

Minimum value → 0

Maximum value → 9

Example: Set the Sensitivity to 5.

1. [press 2s] FLO Unit
2. [press x3] SEnSit.
3. [press 2s] 0
4. [press x5] 5

Save the new setting:

[press 2s] SAUE ? n
[press] SAUE ? Y
[press] StoriNG.

[press] Go to next menu item
[press] Return to Normal Operation

P-Set

This function is available on these versions of the 2537:

`PuLSE` | ~~`di Si tAl`~~
~~`IIn OFF`~~ | ~~`Y-20`~~
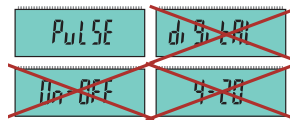
Select DIVIDER or TOTAL operation.
The factory setting is TOTAL.

PULSE DIVIDER Output   = Input pulses ÷ P-Factor

DIVIDER allows you to set a scaling value (P-Factor) from 1.0000 to 99999.

Example: If the P-Factor is set for 2, then the 2537 will output one pulse for every 2 pulses received from the sensor.
This selection enables the output frequency to be scaled down to match associated equipment capabilities.

When using the PULSE DIVIDER output, associated equipment must divide the K-factors in this manual by the P-Factor for correct calibration.
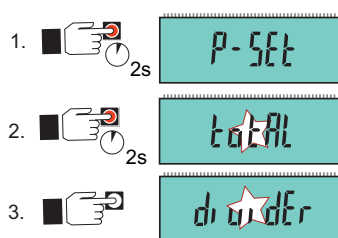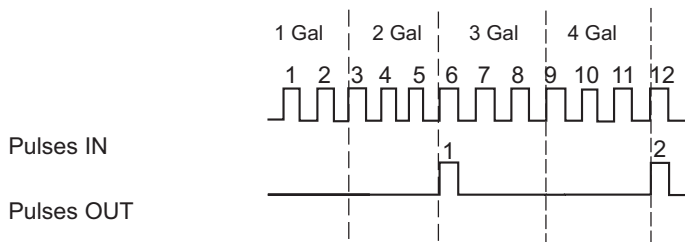

Pulses IN

Pulses OUT
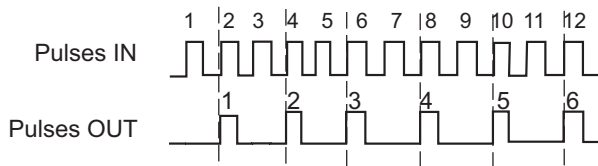
PULSE TOTAL Output = Input pulses ÷ (K-Factor • P-Factor)
TOTAL is a traditional pump pulser function. This selection will allow the entry of a K-Factor to define a volumetric unit, then set a P-Factor to define the number of volumetric units required to generate one pulse out.
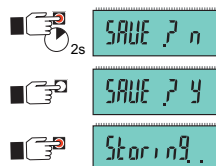
Example:
Set the Total Pulse output so there is one pulse out for each 2 gallons that passes the sensor if the K-factor is 3.0.

1.   (K) Factor = 3.0 (pulses in per gallon)
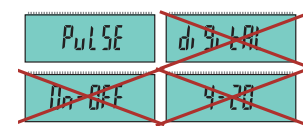2.   P- Factor = 2 (gallons out per pulse)

Pulses IN

Pulses OUT

---

1. ■ 👆 2s `P-SEt`

2. ■ 👆 2s `totAL`

3. ■ 👆 `di ☆dEr`

Save the new setting:

■ 👆 2s `SAUE ? n`

■ 👆 `SAUE ? Y`

■ 👆 `StorinG..`

■ 👆 Go to next menu item

👆 Return to Normal Operation

P-Factor

This function is available on these versions of the 2537:

`PuLSE` | ~~`di Si tAl`~~
~~`IIn OFF`~~ | ~~`Y-20`~~

The factory setting is 1.0000

`P-FActor`

Minimum value `1.0000`

Maximum value `99999`

In PULSE DIVIDER mode the P-Factor divides:
The pulse stream from the paddlewheel sensor will be divided by the P-Factor. The resulting frequency is output through a relay.

In PULSE TOTAL mode the P-Factor multiplies:
The pulse stream from the paddlewheel sensor is divided by the K-Factor MULTIPLIED by the P-factor. The resulting frequency is output through a relay.

---

1. ■ 👆 2s `P-FActor`

2. ■ 👆 2s `◄6.000`

3. ■ 👆 x4 `▲0.000`

4. ■ 👆 `6.000`

5. ■ 👆 x2 `62.00`

Save the new setting:

■ 👆 2s `SAUE ? n`

■ 👆 `SAUE ? Y`

■ 👆 `StorinG..`

■ 👆 Go to next menu item

👆 Return to Normal Operation
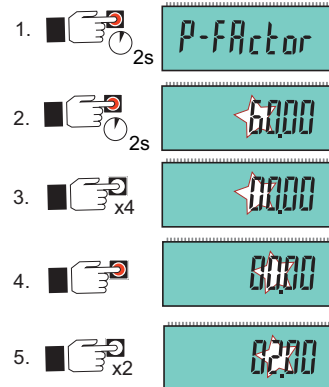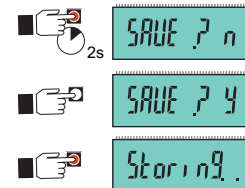
Set Relay operation

The Flow Switch has one relay (SPDT or solid-state) that can be programmed as a HIGH (Hi) alarm or a LOW (Lo) alarm.

---

1. Select HI or LO Relay Alarm logic

Example: Change the Relay Logic to Low:

Save the new setting:

A HI alarm will be activated when the flow rate rises ABOVE the setpoint.
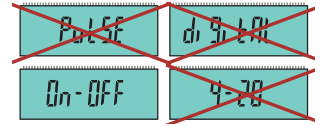
A LO alarm will be activated when the flow rate falls BELOW the setpoint.

The factory setting is Hi(gh).

1. ■ 2s — FLO Unit
2. ■ x4 — rLY Lo9
3. ■ 2s — ☆
4. ■ — ★

1. ■ 2s — SAVE ? n
2. ■ — SAVE ? Y
3. ■ — Stor in9 .

Go to next menu item — Return to Normal Operation

---

2. Program the SETPOINT.

Example: Change the Setpoint to 8.0000:

The SETPOINT is the flow rate where the relay will be energized. The factory setting is 5.0000.

Save the new setting:

Minimum value — 0.0000

Maximum value — 99999

1. ■ 2s — FLO Unit
2. ■ x5 — rLY SEt
3. ■ 2s — 5.0000
4. ■ x3 — 8.0000
5. ■ — 8.0000

1. ■ 2s — SAVE ? n
2. ■ — SAVE ? Y
3. ■ — Stor in9 .

Go to next menu item — Return to Normal Operation

---

3. Program the HYSTERESIS.

Example: Change the Hysteresis to 5.0000:

Hysteresis holds a relay energized until the flow rate moves this amount past the setpoint. The factory setting is 0.5000

Save the new setting:

Minimum value — 0.0000

Maximum value — 99999

1. ■ 2s — FLO Unit
2. ■ x6 — rLY HYS
3. ■ 2s — 0.500
4. ■ x5 — 5.000

1. ■ 2s — SAVE ? n
2. ■ — SAVE ? Y
3. ■ — Stor in9 .

Go to next menu item — Return to Normal Operation

---

4. Program the DELAY.

Example: Change the Delay to 10.0:

When the flow rate reaches the setpoint, the 2537 will wait this long (in seconds) before triggering the alarm.
The factory setting is 0000.0 seconds.

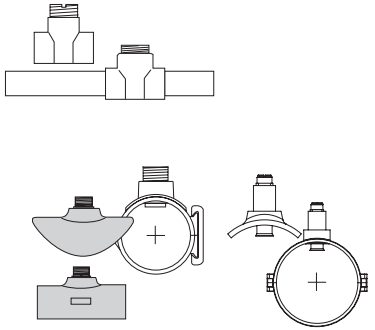**Save the new setting:**

Minimum value — 0000.0

Maximum value — 6400.0

1. ■ 2s — FLO Unit
2. ■ x7 — rLY dLY
3. ■ 2s — 0000.
4. ■ — 6000.
5. ■ — 0100.

1. ■ 2s — SAVE ? n
2. ■ — SAVE ? Y
3. ■ — Stor in9 .

Go to next menu item — Return to Normal Operation

K-Factors

When using the PULSE DIVIDER output, associated equipment must divide the K-factors by the P-Factor.

PIPE SIZE (IN.)	FITTING	2536/8512-XX	
		U.S. GAL	LITERS
SCH 80 PVC TEES FOR SCH 80 PVC PIPE			
1/2	PV8T005	991.71	262.01
3/4	PV8T007	545.14	144.03
1	PV8T010	352.44	93.114
1-1/4	PV8T012	177.18	46.812
1-1/2	PV8T015	117.85	31.137
2	PV8T020	66.739	17.633
2-1/2	PV8T025	42.994	11.359
3	PV8T030	26.652	7.0414
4	PV8T040	15.006	3.9645
SCH 80 CPVC TEES FOR SCH 80 CPVC PIPE			
1/2	CPV8T005	991.71	262.01
3/4	CPV8T007	545.14	144.03
1	CPV8T010	352.44	93.114
1-1/4	CPV8T012	177.18	46.812
1-1/2	CPV8T015	117.85	31.137
SCH 80 PVC SADDLES FOR SCH 80 PVC PIPE			
2	PV8S020	66.739	17.633
2-1/2	PV8S025	42.994	11.359
3	PV8S030	26.652	7.0414
4	PV8S040	15.006	3.9645
6	PV8S060	8.3246	2.1994
8	PV8S080	5.0164	1.3253
SCH 80 PVC SADDLE ON SCH 40 PVC PIPE			
2	PV8S020	54.700	14.452
2-1/2	PV8S025	37.159	9.8175
3	PV8S030	23.697	6.2608
4	PV8S040	13.456	3.5552
6	PV8S060	7.4594	1.9708
8	PV8S080	4.5292	1.1966
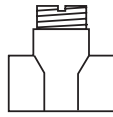
PIPE SIZE (IN.)	FITTING	2536/8512-XX	
		U.S. GAL	LITERS
CARBON STEEL TEES ON SCH 40 PIPE			
1/2	CS4T005	756.00	199.74
3/4	CS4T007	438.69	115.90
1	CS4T010	286.78	75.768
1-1/4	CS4T012	121.22	32.026
1-1/2	CS4T015	91.139	24.079
2	CS4T020	54.468	14.391
STAINLESS STEEL TEES ON SCH 40 PIPE			
1/2	CR4T005	734.20	193.98
3/4	CR4T007	412.10	108.88
1	CR4T010	252.70	66.764
1-1/4	CR4T012	128.12	33.849
1-1/2	CR4T015	77.320	20.428
2	CR4T020	45.780	12.095
GALVANIZED IRON TEES ON SCH 40 PIPE			
1	IR4T010	213.01	56.277
1-1/4	IR4T012	127.75	33.751
1 1/2	IR4T015	94.401	24.941
2	IR4T020	59.420	15.699
BRONZE TEES ON SCH 40 PIPE			
1	BR4T010	213.01	56.277
1-1/4	BR4T012	127.75	33.751
1-1/2	BR4T015	94.401	24.941
2	BR4T020	59.420	15.699
COPPER TEE FITTINGS ON COPPER PIPE SCH K			
1/2	CUKT005	917.84	242.50
3/4	CUKT007	428.27	113.15
1	CUKT010	256.43	67.749
1-1/4	CUKT012	176.44	46.615
1-1/2	CUKT015	115.69	30.565
2	CUKT020	63.385	16.746
COPPER TEE FITTINGS ON COPPER PIPE SCH L			
1/2	CUKT005	858.22	226.74
3/4	CUKT007	385.74	101.91
1	CUKT010	241.64	63.841
1-1/4	CUKT012	170.90	45.152
1-1/2	CUKT015	112.03	29.598
2	CUKT020	61.74	16.310
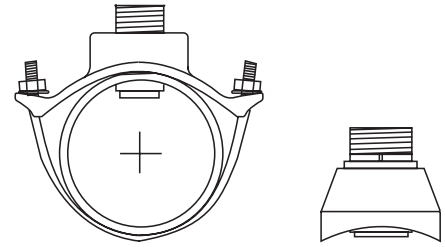
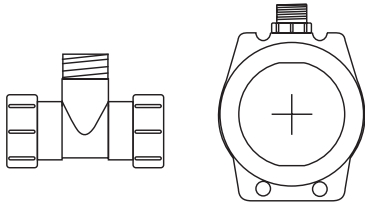| PIPE SIZE (IN.)	FITTING	2536/8512-XX	
		U.S. GAL	LITERS
STAINLESS STEEL WELDOLETS ON SCH 40 PIPE			
2-1/2	CR4W025	37.600	9.9339
3	CR4W030	24.340	6.4306
4	CR4W040	13.920	3.6777
5	CR4W050	10.860	2.8692
6	CR4W060	7.5200	1.9868
8	CR4W080	4.3400	1.1466
CARBON STEEL WELDOLETS ON SCH 40 PIPE			
2-1/2	CS4W025	37.600	9.9339
3	CS4W030	24.340	6.4306
4	CS4W040	13.920	3.6777
5	CS4W050	10.860	2.8692
6	CS4W060	7.5200	1.9868
8	CS4W080	4.3400	1.1466
COPPER/BRONZE BRAZOLETS ON SCH 40 PIPE			
2-1/2	BR4B025	37.600	9.934
3	BR4B030	24.340	6.431
4	BR4B040	13.920	3.678
5	BR4B050	10.860	2.869
6	BR4B060	7.5200	1.987
8	BR4B080	4.3400	1.147
SCH 80 IRON SADDLES ON SCH 80 PIPE			
2	IR8S020	64.720	17.099
2-1/2	IR8S025	42.480	11.223
3	IR8S030	26.420	6.980
4	IR8S040	14.700	3.884
5	IR8S050	12.180	3.218
6	IR8S060	8.4400	2.230
8	IR8S080	4.9000	1.295
SCH 80 IRON SADDLE ON SCH 40 PIPE			
2	IR8S020	53.640	14.172
2-1/2	IR8S025	37.600	9.934
3	IR8S030	23.220	6.135
4	IR8S040	13.260	3.503
5	IR8S050	11.040	2.917
6	IR8S060	7.2400	1.913
8	IR8S080	4.4000	1.162

H-Dimensions

The plastic insert in Weldolet fittings MUST be removed during the welding process. When reinstalled, it is important that the insert be threaded to the proper height ("H" dimension).

Weldolet part number	"H" dimension inches	mm
CS4W020	2.38	60.45
CS4W025	2.33	59.18
CS4W030	2.32	58.92
CS4W040	2.30	58.42
CS4W050	3.09	78.48
CS4W060	2.96	75.18
CS4W080	2.73	69.34
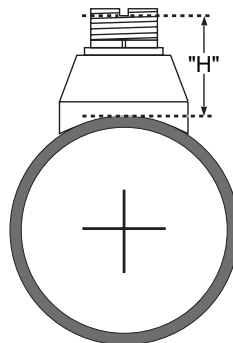
Weldolet part number	"H" dimension inches	mm
CR4W020	2.38	60.45
CR4W025	2.33	59.18
CR4W030	2.32	58.92
CR4W040	2.30	58.42
CR4W050	3.09	78.48
CR4W060	2.96	75.18
CR4W080	2.73	69.34

+GF+

Signet 2537 Flowmeter

K-Factors

PIPE SIZE	FITTING	2536/8512-XX	
		U.S. GAL	LITERS
POLYPROPYLENE FITTINGS (DIN/ISO AND BS AND ANSI)			
DN 15	PPMT005	952.87	251.75
DN 20	PPMT007	563.10	148.77
DN 25	PPMT010	291.60	77.042
DN 32	PPMT012	169.22	44.709
DN 40	PPMT015	103.90	27.450
DN 50	PPMT020	60.789	16.060
DN 65	PPMT025	41.498	10.964
DN 80	PPMT030	26.786	7.0769
DN 100	PPMT040	17.415	4.6011
DN 125	PPMT050	10.168	2.6864
DN 150	PPMT060	7.3119	1.9318
DN 200	PPMT080	3.9946	1.0554

| PIPE SIZE	FITTING	2536/8512-XX	
		U.S. GAL	LITERS
PVDF FITTINGS (DIN/ISO AND BS AND ANSI)			
DN 15	SFMT005	827.26	218.56
DN 20	SFMT007	489.87	129.42
DN 25	SFMT010	283.55	74.915
DN 32	SFMT012	158.59	41.899
DN 40	SFMT015	86.980	22.980
DN 50	SFMT020	50.385	13.312
DN 65	SFMT025	36.133	9.5465
DN 80	SFMT030	24.715	6.5297
DN 100	SFMT040	16.120	4.2589
DN 125	SFMT050	8.8624	2.3415
DN 150	SFMT060	6.4543	1.7052
DN 200	SFMT080	4.0720	1.0758
PVC FITTINGS (DIN/ISO) - EUROPE ONLY			
DN 15	PVMT005	972.37	256.90
DN 20	PVMT007	485.69	128.32
DN 25	PVMT010	297.27	78.540
DN 32	PVMT012	170.25	44.980
DN 40	PVMT015	103.71	27.400
DN 50	PVMT020	59.500	15.720
DN 65	PVMT025	34.973	9.2400
DN 80	PVMT030	24.981	6.6000
DN 100	PVMT040	16.275	4.3000
DN 150	PVMT060	8.1756	2.1600
DN 200	PVMT080	4.0878	1.0800

Maintenance and Cleaning

The 2537 requires very little maintenance.
- If the paddlewheel becomes fouled, it can be cleaned with mild detergents and a small brush.
- The electronics portion of the 2537 does not require maintenance or cleaning.

Rotor Replacement Procedure

1. To remove the rotor, insert a small screwdriver between the rotor and the ear of the sensor.

2. Twist the screwdriver blade to flex the ear outward enough to remove one end of the rotor and pin. DO NOT flex the ear any more than necessary! If it breaks, the sensor cannot be repaired.

3. Install the new rotor by inserting one tip of the pin into the hole, then flex the opposite ear back enough to slip rotor into place.
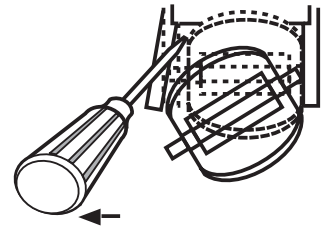
Ordering Information

Mfr. Part No.	Code	Description

2537 system for 0.5 in. to 4 in. pipes, with polypropylene body, Black PVDF rotor, Titanium pin, FPM O-rings

Mfr. Part No.	Code	Description
3-2537-1C-P0	159 001 291	Pulse Divider via Dry-Contact Relay, Integral Mount
3-2537-2C-P0	159 001 292	Pulse Divider via Solid-State Relay, Integral Mount
3-2537-3C-P0	159 001 293	Flow Switch via Dry-Contact Relay, Integral Mount
3-2537-4C-P0	159 001 294	Flow Switch via Solid-State Relay, Integral Mount
3-2537-5C-P0	159 001 295	Digital (S^{3}L), Integral Mount
3-2537-6C-P0	159 001 296	4-20 mA, Integral Mount

2537 system for 5 in. to 8 in. pipes, with polypropylene body, Black PVDF rotor, Titanium pin, FPM O-rings

Mfr. Part No.	Code	Description
3-2537-1C-P1	159 001 303	Pulse Divider via Dry-Contact Relay, Integral Mount
3-2537-2C-P1	159 001 304	Pulse Divider via Solid-State Relay, Integral Mount
3-2537-3C-P1	159 001 305	Flow Switch via Dry-Contact Relay, Integral Mount
3-2537-4C-P1	159 001 306	Flow Switch via Solid-State Relay, Integral Mount
3-2537-5C-P1	159 001 307	Digital (S^{3}L), Integral Mount
3-2537-6C-P1	159 001 308	4-20 mA, Integral Mount

2537 system for 0.5 in. to 4 in. pipes, with natural PVDF body, rotor and pin, FPM O-rings

Mfr. Part No.	Code	Description
3-2537-1C-T0	159 001 315	Pulse Divider via Dry-Contact Relay, Integral Mount
3-2537-2C-T0	159 001 316	Pulse Divider via Solid-State Relay, Integral Mount
3-2537-3C-T0	159 001 317	Flow Switch via Dry-Contact Relay, Integral Mount
3-2537-4C-T0	159 001 318	Flow Switch via Solid-State Relay, Integral Mount
3-2537-5C-T0	159 001 319	Digital (S^{3}L), Integral Mount
3-2537-6C-T0	159 001 320	4-20 mA, Integral Mount

Accessories

Mfr. Part No.	Code	Description
3-2536.320-1	198 820 052	Rotor, PVDF Black
3-2536.320-2	159 000 272	Rotor, PVDF Natural
3-2536.320-3	159 000 273	Rotor, Tefzel®
3-2536.321	198 820 054	Rotor and Pin, PVDF Natural
3-2536.322-1	198 820 056	Sleeved Rotor, PVDF Black
3-2536.322-2	198 820 057	Sleeved Rotor, PVDF Natural
3-2536.322-3	198 820 058	Sleeved Rotor, Tefzel®
M1546-1	198 801 182	Rotor Pin, Titanium
M1546-2	198 801 183	Rotor Pin, Hastelloy-C
M1546-3	198 820 014	Rotor Pin, Tantalum
M1546-4	198 820 015	Rotor Pin, Stainless Steel
P51545	198 820 016	Rotor Pin, Ceramic
1220-0021	198 801 186	O-Ring, FPM
1224-0021	198 820 006	O-Ring, EPDM
1228-0021	198 820 007	O-Ring, FFPM
P31536	198 840 201	Sensor Plug, Polypro
P31536-2	159 000 649	Sensor Plug, PVDF
3-8050.396	159 000 617	RC Filter kit (for relay use)
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)
3-9000.392-3	159 001 430	Liquid-tight connector kit, dual-cable gland
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