

# Hedland® Flow Transmitters

## For Liquids / Air and Other Compressed Gases

- Full line of multi-functional remote flow indicators and transmitters
- Operate as part of a totally integrated electronic process control/data acquisition system
- Transmitter provides visual indication and electronic interface
- Provides 3 factory-calibrated proportional analog outputs: 4-20 mA, 0-5 Vdc and 0-10 Vdc
- Exceeds US and meets European standards for conducted and radiated emissions
- Available from 1/4" to 1-1/2" sizes in Aluminum, Brass and Stainless
- Installs in any position
- Easy to Read Linear Scale
- No Flow Straighteners or Special Piping Requirements
- Insensitive to Shock and Vibration
- Special Scales Available



### SPECIFICATIONS:

#### MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone

C360 Brass body, piston and cone

T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone (Petroleum-based meters)

T303 Stainless body, C360 Brass piston and cone (Water meters)

T316 Stainless body, piston and cone

#### PETROLEUM (Oil) COMMON PARTS:

Spider Plate: T316 SS

Spring: T302 SS

Fasteners: T303 SS

Pressure Seals: Viton®

Guard: Polycarbonate

Retaining Ring: SAE 1070/1090 Carbon Steel

Retaining Spring: SAE 1070/1090 Carbon Steel

Indicator and Internal Magnet: PPS / Ceramic

Guard Seal: Urethane cellular foam

Scale Support: 6063 - T6 Aluminum

#### PHOSPHATE ESTER (PE) COMMON PARTS:

Spider Plate: T316 SS

Spring: T302 SS

Fasteners: T303 SS

Pressure Seals: EPR

Guard: Polycarbonate

Retaining Ring: SAE 1070/1090 Carbon Steel

Retaining Spring: SAE 1070/1090 Carbon Steel

Indicator and Internal Magnet: PPS / Ceramic

Guard Seal: Urethane cellular foam

Scale Support: 6063 - T6 Aluminum

#### WATER-BASED (WBF), WATER, AIR COMMON PARTS:

Spider Plate: T316 SS

Spring: T302 SS

Fasteners: T303 SS

Pressure Seals: Viton®

Guard: Polycarbonate

Retaining Ring: T316 SS

Retaining Spring: T316 SS

Indicator and Internal Magnet: PPS / Ceramic

Guard Seal: Urethane cellular foam

Scale Support: 6063 - T6 Aluminum

#### API OIL / AIR / CAUSTIC and CORROSIVE LIQUIDS and GASES:

Spider Plate: T316 SS

Spring: T316 SS

Fasteners: T316 SS

Pressure Seals: Viton®

Guard: Polycarbonate

Retaining Ring: T316 SS

Retaining Spring: T316 SS

Indicator and Internal Magnet: PPS / Ceramic

Guard Seal: Urethane cellular foam

Scale Support: 6063 - T6 Aluminum

THREADS: SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179

TEMPERATURE RANGE: -20 to 240°F (-29 to 116°C)

#### PRESSURE RATING:

##### Aluminum / Brass Operating:

Liquids - 3,500 psi/241 bar max. with a 3:1 safety factor.

Gases - 1,000 psi/69 bar max. with a 10:1 safety factor.

Fatigue Rating: per NFPA T2.6.1R1-1991, (for details see page 7)

##### Stainless Steel Operating:

Liquids - 6,000 psi/414 bar max. with a 3:1 safety factor.

Gases - 1,500 psi/103 bar max. with a 10:1 safety factor.

Fatigue Rating: per NFPA T2.6.1R1-1991, (for details see page 7)

ACCURACY: ± 2% of full scale reading

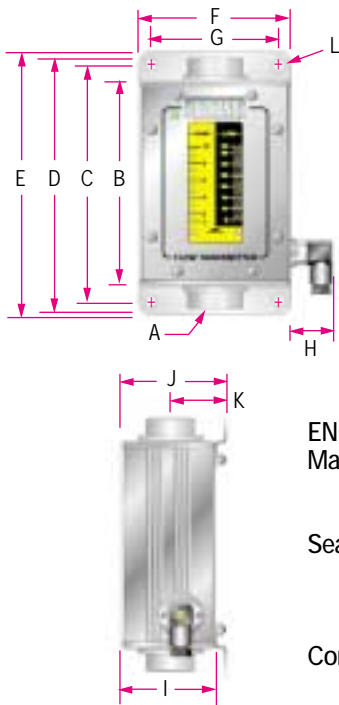
REPEATABILITY: ± 1%

#### PRESSURE DROP REFERENCE TABLE:

	FLUID TYPE							
	Oil	PE	WBF	Water	API Oil	Caustic & Corrosive Liquids	Air/Caustic & Corrosive Gases	Air
50% / 100% Pressure Drop	p. 10	p. 16	p. 22	p. 28	p. 32	p. 32	p. 34	p. 36
Pressure Drop Chart	p. 51	p. 52	p. 53	p. 54	p. 55	p. 54	p. 55	p. 56

# Hedland® Flow Transmitters

## For Liquids / Air and Other Compressed Gases



### DIMENSIONS:

A	B	C	D	E	F	G	H	I	J	K	L
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	LENGTH in (mm)	DEPTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	HOLE DIA. in (mm)
1/4 (SAE 6)	5.41 (138)	6.41 (163)	6.58 (167)	7.11 (181)	3.93 (100)	3.23 (82)	1.08 (27)	2.38 (61)	2.94 (75)	1.70 (43)	.28 (7)
1/2 (SAE10)	5.41 (138)	6.41 (163)	6.58 (167)	7.11 (181)	3.93 (100)	3.23 (82)	1.08 (27)	2.38 (61)	2.94 (75)	1.70 (43)	.28 (7)
3/4 (SAE 12)	6.04 (154)	7.04 (179)	7.19 (183)	7.74 (197)	4.30 (109)	3.60 (92)	1.08 (27)	2.77 (70)	3.33 (85)	1.90 (48)	.28 (7)
1 (SAE 16)	6.04 (154)	7.04 (179)	7.19 (183)	7.74 (197)	4.30 (109)	3.60 (92)	1.08 (27)	2.77 (70)	3.33 (85)	1.90 (48)	.28 (7)
1-1/4 (SAE 20)	10.65 (271)	11.65 (296)	12.18 (310)	12.35 (314)	5.54 (141)	4.84 (123)	1.08 (27)	4.90 (102)	4.56 (116)	2.40 (61)	.28 (7)
1-1/2 (SAE 24)	10.65 (271)	11.65 (296)	12.18 (310)	12.35 (314)	5.54 (141)	4.84 (123)	1.08 (27)	4.90 (102)	4.56 (116)	2.40 (61)	.28 (7)

### ENCLOSURE:

- Material:** Anodized aluminum with polycarbonate lens/cover (nylon lens/cover with Phosphate Ester). Urethane cellular foam gasket between enclosure and lens/cover. Viton O-rings between enclosure and flow meter body.
- Seals:**
- Connection:** 4-pin water-tight connection (standard). Other connections are available – consult factory for details.
- Fasteners:** T303 SS
- Rating:** NEMA 12 & 13 (IP65)
- Approvals:** CE Certification – Heavy Industrial (optional)  
EMC Emissions to EN 50081-2  
EMC Immunity to EN 50082-2

### ELECTRONIC SPECIFICATIONS:

Power Requirement:	7-28 Vdc @ 4-20 mA (0.6W max.)
Circuit Protection:	Reverse polarity & current limit
Repeatability:	±0.05%
Non-linearity:	±0.05%
Sensitivity:	Infinite
Response Time:	0.1 seconds
Temperature Drift:	0.05% of span per °C maximum
Analog Outputs:	4-20 mA into 1000 ohms maximum 0-5 Vdc into 10K ohms minimum 0-10 Vdc into 10K ohms minimum
Controls:	OFFSET (4 mA) and SPAN (20 mA, 5 V and 10 V) factory calibrated
User Connections:	15-foot pig-tail (standard)
Transmission Distance:	4-20 mA limited by cable resistance 0-5 Vdc 1000-foot maximum 0-10 Vdc 1000-foot maximum

### ELECTRICAL CIRCUITRY:

All Hedland flow sensors (1/4 to 1-1/2 inch series) are designed to convert fluid flow rate to proportional analog output signals of 4-20 mA, 0-5 Vdc, and 0-10 Vdc. The sensor is "loop powered" and inherently isolated, it operates on 4-20 mA current. A DC power source must be used to provide the necessary excitation to the product (see figure 1 & 2). The three (3) standard field selectable outputs (see figure 1) are designed to interface with virtually all analog process control devices. The flow sensor is supplied with 15 feet of shielded 4-wire #22 AWG type PVC jacketed cable, color coded as follows: Optional 25 ft., 50 ft., 75 ft. and 100 ft. cables are available – consult factory for details.

Figure 1

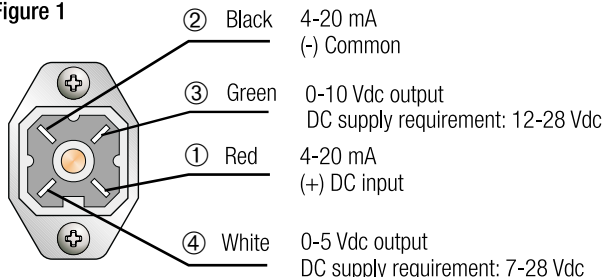
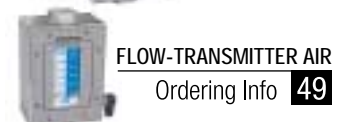
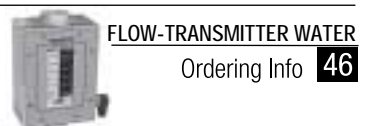
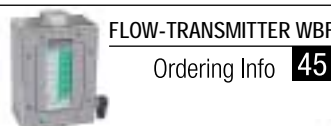
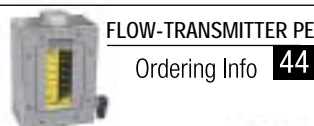
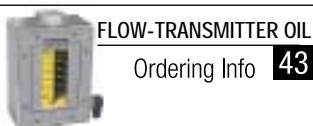
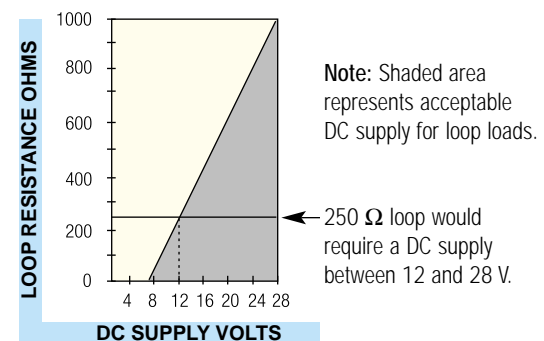


Figure 2 Load Limitations 4-20 mA Output Only



# Flow-Alert™ Flow Switches and Flow Transmitters For Petroleum Fluids

## ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		MODEL NUMBER <i>(see example below*)</i>			MATERIAL			OPTIONS		
	GPM	LPM	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	Flow-Alert 1 SWITCH	Flow-Alert 2 SWITCH	MULTIPLE OUTPUT SENSOR
1/4 SAE 6	0.1 - 1.0	0.5 - 3.75	H200 * - 010 - †	H201 * - 010 - †	H202 * 010 - †	A	B	6000 PSI S	F1	F2	EL
	0.2 - 2.0	1 - 7.5	H200 * - 020 - †	H201 * - 020 - †	H202 * 020 - †						
1/2 SAE 10	0.1 - 1.0	0.5 - 3.75	H600 * - 001 - †	H601 * - 001 - †	H602 * 001 - †	A	B	6000 PSI S	F1	F2	EL
	0.2 - 2.0	1 - 7.5	H600 * - 002 - †	H601 * - 002 - †	H602 * 002 - †						
	0.5 - 5.0	2 - 19	H600 * - 005 - †	H601 * - 005 - †	H602 * 005 - †						
	1 - 10	5 - 38	H600 * - 010 - †	H601 * - 010 - †	H602 * 010 - †						
	1 - 15	4 - 56	H600 * - 015 - †	H601 * - 015 - †	H602 * 015 - †						
3/4 SAE 12	0.2 - 2.0	1 - 7.5	H700 * - 002 - †	H701 * - 002 - †	H702 * 002 - †	A	B	5000 PSI S	F1	F2	EL
	0.5 - 5.0	2 - 19	H700 * - 005 - †	H701 * - 005 - †	H702 * 005 - †						
	1 - 10	5 - 38	H700 * - 010 - †	H701 * - 010 - †	H702 * 010 - †						
	2 - 20	10 - 76	H700 * - 020 - †	H701 * - 020 - †	H702 * 020 - †						
	3 - 30	10 - 115	H700 * - 030 - †	H701 * - 030 - †	H702 * 030 - †						
1 SAE 16	0.2 - 2.0	1 - 7.5	H760 * - 002 - †	H761 * - 002 - †	H762 * 002 - †	A	B	5000 PSI S	F1	F2	EL
	0.5 - 5.0	2 - 19	H760 * - 005 - †	H761 * - 005 - †	H762 * 005 - †						
	1 - 10	5 - 38	H760 * - 010 - †	H761 * - 010 - †	H762 * 010 - †						
	2 - 20	10 - 76	H760 * - 020 - †	H761 * - 020 - †	H762 * 020 - †						
	3 - 30	10 - 115	H760 * - 030 - †	H761 * - 030 - †	H762 * 030 - †						
1-1/4 SAE 20	3 - 30	10 - 110	H800 * - 030 - †	H801 * - 030 - †	H802 * 030 - †	A	B	5000 PSI S	F1	F2	EL
	5 - 50	20 - 190	H800 * - 050 - †	H801 * - 050 - †	H802 * 050 - †						
	10 - 75	40 - 280	H800 * - 075 - †	H801 * - 075 - †	H802 * 075 - †						
	10 - 100	50 - 380	H800 * - 100 - †	H801 * - 100 - †	H802 * 100 - †						
	10 - 150	50 - 560	H800 * - 150 - †	H801 * - 150 - †	H802 * 150 - †						
1-1/2 SAE 24	3 - 30	10 - 110	H860 * - 030 - †	H861 * - 030 - †	H862 * 030 - †	A	B	5000 PSI S	F1	F2	EL
	5 - 50	20 - 190	H860 * - 050 - †	H861 * - 050 - †	H862 * 050 - †						
	10 - 75	40 - 280	H860 * - 075 - †	H861 * - 075 - †	H862 * 075 - †						
	10 - 100	50 - 380	H860 * - 100 - †	H861 * - 100 - †	H862 * 100 - †						
	10 - 150	50 - 560	H860 * - 150 - †	H861 * - 150 - †	H862 * 150 - †						

(example) H 701 \* A - 030 - † F1 or † F2



### Flow-Apert Flow Switches

F1 = Single Switch  
F2 = Double Switch



(example) H 701 \* A - 030 - † EL

### Multiple Output Flow Sensor

3 Standard field selectable outputs

0-5 VDC } Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow,  
0-10 VDC } and 20 mA (5/10 VDC) at full flow. Optional 5-point calibration certificate  
4-20 mA } (see Price and Availability Digest for details.)

Note: For 50% and 100% flow/pressure drop information, see page 10.  
For detailed flow/pressure drop charts, see page 51.