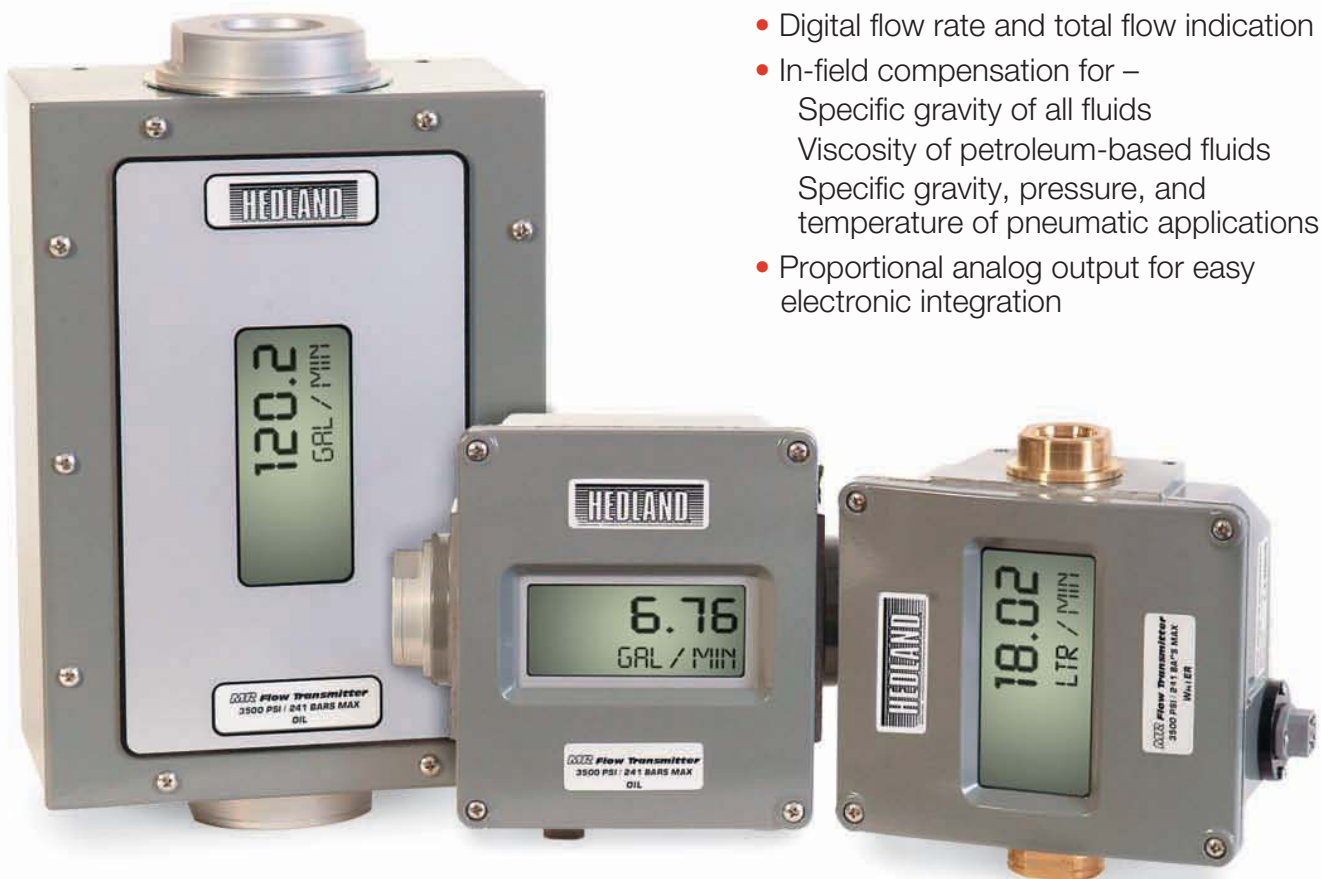


# HEDLAND®

## MR Flow Transmitters

*For Liquids / Air and Other Compressed Gases*

- Non-contact sensor electronics
- Digital flow rate and total flow indication
- In-field compensation for –
  - Specific gravity of all fluids
  - Viscosity of petroleum-based fluids
  - Specific gravity, pressure, and temperature of pneumatic applications
- Proportional analog output for easy electronic integration



# Hedland MR 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
- Non-contact sensor electronics
- Electronic signal conditioning circuit
- Digital flow rate and total flow indication
- Proportional analog output
- In-field compensation for –
  - Specific gravity of all fluids
  - Viscosity of petroleum-based fluids
  - Specific gravity, pressure, and temperature of pneumatic systems
- CE compliant- exceeds US and meets European standards for EMI/EMC

### 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 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      **Retaining Ring:** SAE 1070/1090 Carbon Steel  
**Spring:** T302 SS      **Retaining Spring:** SAE 1070/1090 Carbon Steel  
**Fasteners:** T303 SS      **Internal Magnet:** Teflon® Coated Alnico 8  
**Pressure Seals:** Viton®      **Enclosure Seal:** Silicone gasket  
**Lens:** Polycarbonate

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

**Spider Plate:** T316 SS      **Retaining Ring:** SAE 1070/1090 Carbon Steel  
**Spring:** T302 SS      **Retaining Spring:** SAE 1070/1090 Carbon Steel  
**Fasteners:** T303 SS      **Internal Magnet:** Teflon® Coated Alnico 8  
**Pressure Seals:** EPR      **Enclosure Seal:** Silicone gasket  
**Lens:** Polycarbonate

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

**Spider Plate:** T316 SS      **Retaining Ring:** T316 SS  
**Spring:** T302 SS      **Retaining Spring:** T316 SS  
**Fasteners:** T303 SS      **Internal Magnet:** Teflon® Coated Alnico 8  
**Pressure Seals:** Viton®      **Enclosure Seal:** Silicone gasket  
**Lens:** Polycarbonate

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

**Spider Plate:** T316 SS      **Retaining Ring:** T316 SS  
**Spring:** T316 SS      **Retaining Spring:** T316 SS  
**Fasteners:** T316 SS      **Internal Magnet:** Teflon® Coated Alnico 8  
**Pressure Seals:** Viton®      **Enclosure Seal:** Silicone gasket  
**Lens:** Polycarbonate

**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 maximum with a 3:1 safety factor  
**Gases** - 1,000 psi/69 bar maximum with a 10:1 safety factor

##### Stainless Steel Operating:

**Liquids** - (1/4" to 1/2") - 6,000 psi/414 bar maximum with a 3:1 safety factor  
**Liquids** - (3/4" to 1-1/2") - 5,000 psi/345 bar maximum with a 3:1 safety factor  
**Gases** - 1,500 psi/103 bar maximum with a 10:1 safety factor

**Fatigue Rating** - per NFPA T2.61R1-1991

(for details see page 7 of our standard catalog #140-2G)

**ACCURACY:** 2% of full scale

**REPEATABILITY:** 0.5%

**PRESSURE DROP REFERENCE TABLE** (see catalog #140-2G):

	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.53	p.54	p.55	p.56	p.57	p.56	p.57	p.58

Viton is a registered trademark of DuPont Dow Elastomers  
 Teflon is a registered trademark of E.I. DuPont de Nemours & Co.



# Hedland MR Flow Transmitters

## For Liquids / Air and Other Compressed Gases

### ENCLOSURE:

- Material:** Anodized and epoxy powder-coated aluminum with polycarbonate lens
- Seals:** Silicone gaskets between enclosure and lens  
Viton® O-rings between enclosure and flow meter body
- Connection:** 4-pin connection (standard), see Figure 2  
Other connections available - consult factory for details
- Fasteners:** T303 SS
- Rating:** NEMA 12 & 13 (IP 52/54)

### ELECTRICAL SPECIFICATIONS:

#### Power

- Requirement:** 0-5 Vdc Output: 10-30 Vdc @ 0.75W maximum  
0-10 Vdc Output: 12-30 Vdc @ 0.75W maximum  
4-20 mA Output: loop-powered, 30 Vdc maximum

#### Power

- Consumption:** 25 mA maximum

#### Analog

- Outputs:** 0-5 Vdc and 0-10 Vdc into 10,000 Ohms minimum  
4-20 mA into 1000 Ohms maximum, see Figure 1

#### Circuit

- Protection:** Reverse polarity and current limiting

#### Transmission

- Distance:** 4-20 mA limited by cable resistance  
0-5 Vdc and 0-10 Vdc 1000 feet (300 m) maximum

#### Isolation:

- Inherently isolated from the piping system

#### Display:

- Fixed or toggle modes of operation for rate and totalizer display  
8 digit, 0.70" high numeric display for rate and total  
8 digit, 0.35" high alphanumeric display for units and setup

#### Temperature

- Drift:** 50 ppm / °C (max)

- Analog Output:** Resolution - 1:4000

#### Transient

- Over-Voltages:** Category 3, in accordance with IEC 664

#### Pollution

- Degree:** Category 2, in accordance with IEC 664

- Approvals:** CE compliant

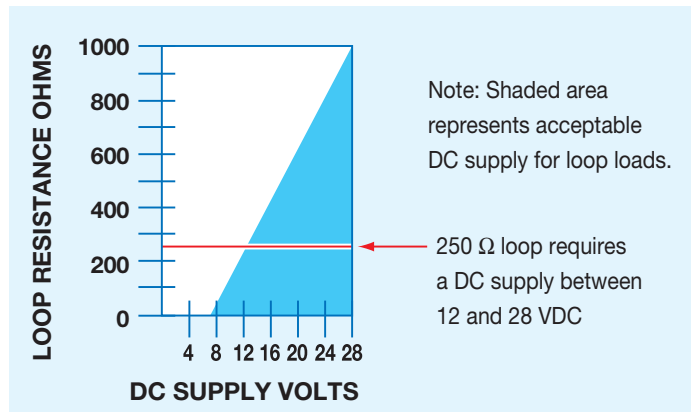
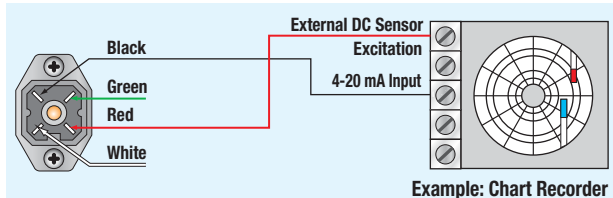


Figure 1. Load Limitations (4-20 mA Output Only)

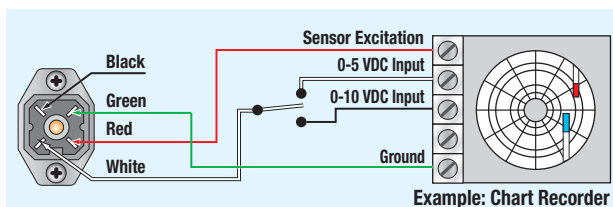
### SCHEMATICS:

The transmitter can be wired in various configurations to allow interface with many different types of data collection and control instrumentation.

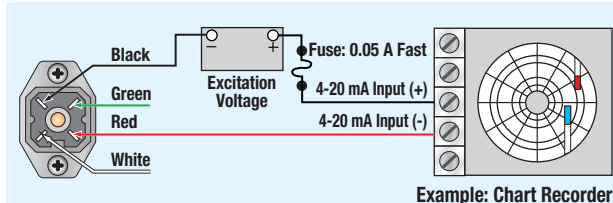
Schematics 1 & 2 represent typical wiring for a target powered by either AC power or DC supply. Schematics 3 & 4 will be utilized when the flow transmitter is operated with loop-powered process indicators or data loggers that do not have external sensor excitation available.



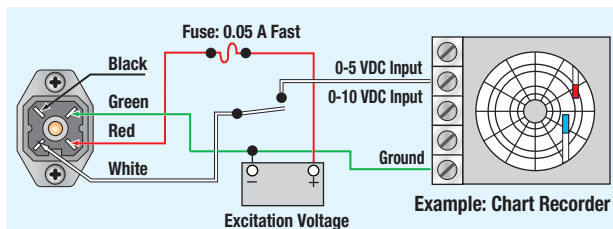
Schematic 1: 4-20 mA connection using target power supply



Schematic 2: 0-5 Vdc or 0-10 Vdc connection using target power supply



Schematic 3: 4-20 mA connection using target external power supply



Schematic 4: 0-5 Vdc or 0-10 Vdc connection using target external power supply

	DC Output Connection	Loop Power Connection
2 Black:	No Connection	(-) 4-20 mA Out
3 Green:	0 VDC	No Connection
1 Red:	(+) DC Power	(+) 4-20 mA In
4 White:	0-5 VDC or 0-10 VDC Output	No Connection

Figure 2. Electrical 4-Pin Connection

# Hedland MR Flow Transmitters

## For Liquids / Air and Other Compressed Gases

### Ordering Information:

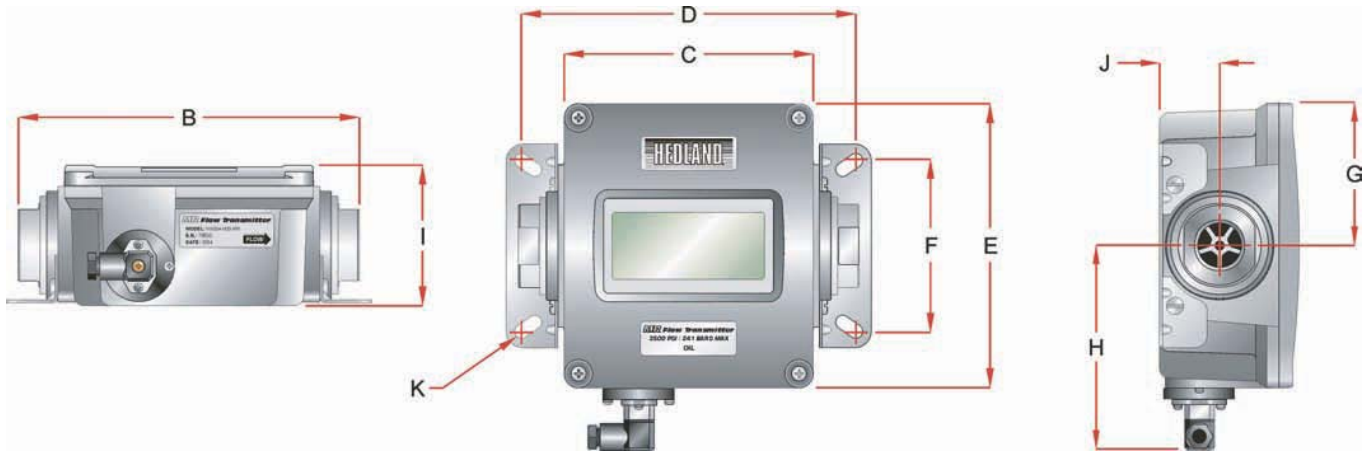
To order MR Flow Transmitters, refer to the Ordering Information tables on pages 45 through 51 of our standard catalog #140-2G, and apply option **-MR**.

Example: **H701A-030-MR**

*3/4" NPTF Aluminum Oil Flow Meter with MR Transmitter option*

### Dimensions:

A Nominal Port Size	B Length In. (mm)	C Length In. (mm)	D Length In. (mm)	E Width In. (mm)	F Width In. (mm)	G Width In. (mm)	H Width In. (mm)	I Depth In. (mm)	J Offset In. (mm)	K Hole Dia. In. (mm)
1/4 (SAE 6)	6.60 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
1/2 (SAE 10)	6.60 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
3/4 (SAE 12)	7.20 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1 (SAE 16)	7.20 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1-1/4 (SAE 20)	12.20 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)
1-1/2 (SAE 24)	12.20 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)



### Optional Remote Display and Signal Processor:

Hedland also offers the F6700/F6750 Series Digital Display with integrated signal processor capabilities to further enhance the utility of the MR Flow Transmitters. In addition to remote flow monitoring, these units can be configured to provide alarm processing and communication options including RS232, RS485, Modbus, Profibus and DeviceNet. For complete product specifications, refer to page 59 of our standard catalog #140-2G.



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