

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



1-800-HEDLAND



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Hedland MR Flow Transmitters

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- 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)

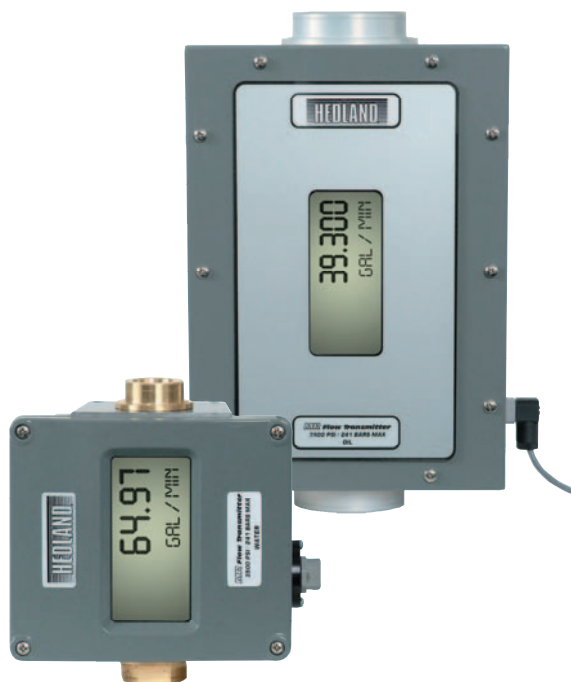
ACCURACY: 2% of full scale

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.



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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

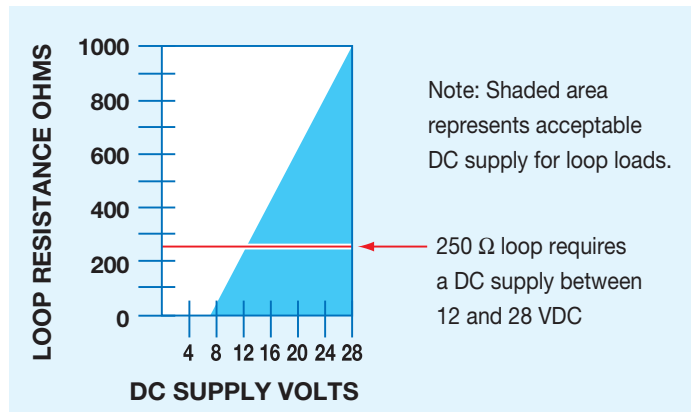
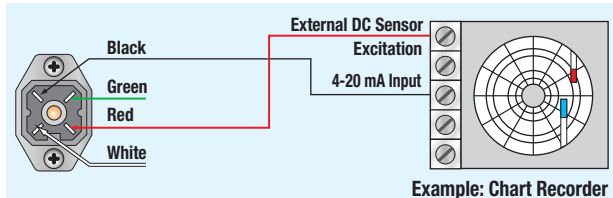


Figure 1. Load Limitations (4-20 mA Output Only)

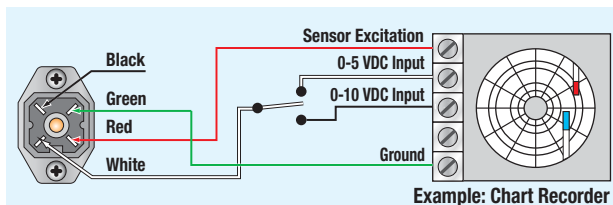
SCHEMATICS:

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

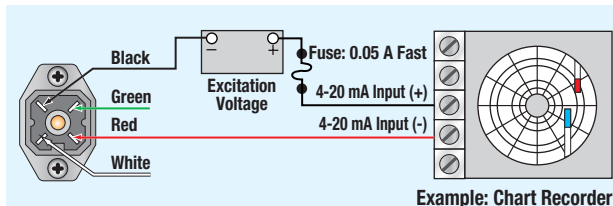
Schematics 1 & 2 represent typical wiring for a target powered by either AC power or DC supply. Schematics 3 & 4 will be utilized when the flow transmitter is operated with loop-powered process indicators or data loggers that do not have external sensor excitation available.



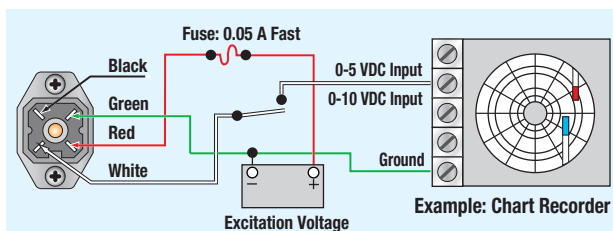
Schematic 1: 4-20 mA connection using target power supply



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

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Ordering Information:

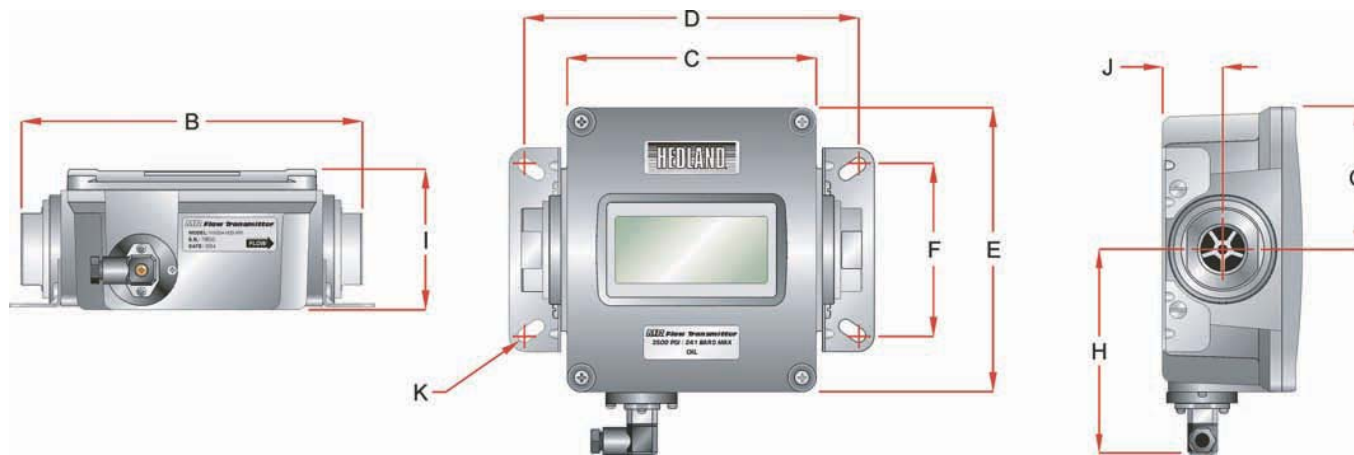
To order MR Flow Transmitters, refer to the Ordering Information tables on pages 45 through 51 of our standard catalog #140-2G, and apply option **-MR**.

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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