

## Digital Display Flow Meter for Liquids / Gases

(RW3, RW3-1, RW3-2, RW3-3 & RW3-4 Options)

The digital display is a 2-wire loop powered flow meter with a built in wet/wet differential pressure sensor which provides a 4-20mA signal and scaled pulse output and large LCD display.

### Features and Benefits

- Displays instantaneous flow rate, total and accumulated total
- Large LCD 17mm (0.67") and 8mm (0.31") for flow rate and total
- Measures 6:1 range with  $\pm 3\%$  F.S. accuracy
- Scaled pulse output according to accumulated total
- Liquid flow ranges from 4 GPH (15 l/h) in 1/2" flow meter to 3000 GPM (12000 l/m) in 8" flow meter.
- Gas flow ranges from 40 SCFH (1 Nm<sup>3</sup>/h) in 1/2" flow meter to 20,000 SCFM (600Nm<sup>3</sup>/m) in 8" flow meter.

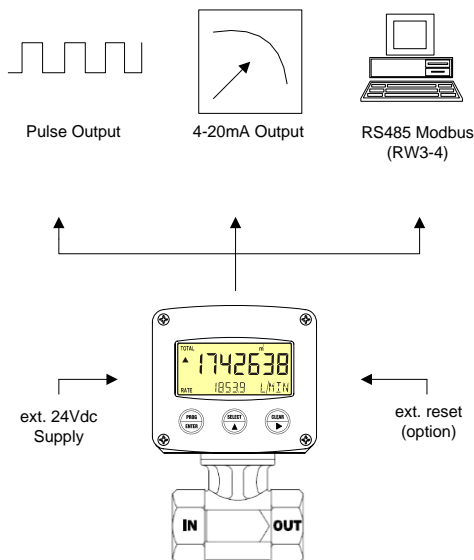
### Applications

- Power and Gas (Utility Industry)
- Process Control for Liquids and Gases
- O2 (Oxygen) Service Applications
- Biodiesel Blending Process

### Principle of Operation

The wet/wet pressure sensor detects the differential pressure created through the calculated flow nozzle. A scaled pulse output according to the accumulated total. Requires a 24Vdc supply not included (option PS-24).

#### Overview Typical Application – RW3-4 Shown



### Specifications

|                      | Standard       | Options  |
|----------------------|----------------|----------|
| <b>Housing</b>       | GRP            | Aluminum |
| <b>Body</b>          | Bronze         | 316 SS   |
| <b>DP Sensor</b>     | 316 SS         | n/a      |
| <b>Seals</b>         | Buna-N         | Viton    |
| <b>Accuracy</b>      | $\pm 3\%$ F.S. |          |
| <b>Repeatability</b> | $\pm 1\%$ F.S. |          |
| <b>Pressure</b>      |                |          |
| Maximum              | 180 psig       | 400 psig |
| Minimum              | 10 psig        | 10 psig  |
| <b>Temperature</b>   |                |          |
| Maximum              | 212°F          | n/a      |
| Minimum              | -30°F          | n/a      |

### Electrical Specifications

#### Power Input

100mA, 24Vdc power supply 20-30 Vdc Input loop powered from 4-20mA signal. Voltage drop 2.6V max.

#### Display

High intensity reflective numeric and alpha numeric LCD, UV resistant. User definable, 8 times / sec -30 secs.

Password Protected, 7 and 11-digit various symbols and measuring units

#### Signal Inputs

Full Scale Range 4-20mA DC

Loop Voltage Drop 2.6 Volts max at 20mA

Update Time 4 times / sec.

Span 0.001 / 999,999 with available decimal position

16 Bit resolution error < 0.01mA /  $\pm 0.05\%$  F.S.

Low cutoff supplied to inhibit indication at low flow rates

#### Signal Outputs

The pulse output transmitting accumulated total

Type one passive transistor output (NPN) max 500Hz pulse length user definable between 1 msec up to 10 sec.

## Model Number System

The example **1/2"-71-R-10-RW3-4** describes a 1/2" pipe size, 7000 series threaded connection, bronze material, flow from left to right, flow rate of 10 GPM, Options – 1 single pole double throw (1S2 option).

| <u>1/2"</u> | -       | <u>7</u>    |  | <u>1</u>   | - | <u>R</u>                            | - | <u>10</u>      | - | <u>RW3-4</u> |
|-------------|---------|-------------|--|------------|---|-------------------------------------|---|----------------|---|--------------|
| Pipe Size   |         | Series      |  | Material   |   | Flow Direction                      |   | Flow Rate      |   | Options      |
| 1/4"        | (8mm)   | 7000 Series |  | 1 - Bronze |   | L – Right to Left                   |   | See Flow Chart |   | See Table    |
| 1/2"        | (15mm)  | 8000 Series |  | 2 - Monel  |   | R – Left to Right                   |   |                |   |              |
| 3/4"        | (20mm)  |             |  | 3 - SST    |   | VUR - Vertical Up Flow Dial Right   |   |                |   |              |
| 1"          | (25mm)  |             |  |            |   | VUL - Vertical Up Flow Dial Left    |   |                |   |              |
| 1 1/2"      | (40mm)  |             |  |            |   | VDR - Vertical Down Flow Dial Right |   |                |   |              |
| 2"          | (50mm)  |             |  |            |   | VDL - Vertical Up Flow Dial Left    |   |                |   |              |
| 2 1/2"      | (65mm)  |             |  |            |   |                                     |   |                |   |              |
| 3"          | (80mm)  |             |  |            |   |                                     |   |                |   |              |
| 4"          | (100mm) |             |  |            |   |                                     |   |                |   |              |
| 5"          | (125mm) |             |  |            |   |                                     |   |                |   |              |
| 6"          | (150mm) |             |  |            |   |                                     |   |                |   |              |
| 8"          | (200mm) |             |  |            |   |                                     |   |                |   |              |

## Table of Options

## Flow Ranges – Series 7000 & 8000

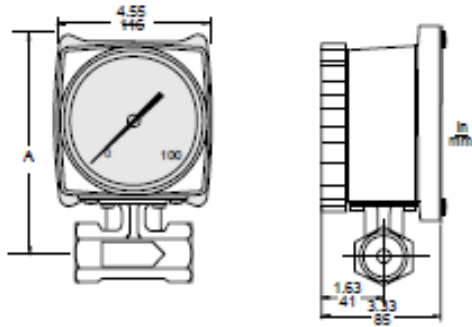
| A     | Viton Seals  |  | Liquids |     |     |      | Gases              |       | Liquids |      |      | Gases              |  |
|-------|--|--|---------|-----|-----|------|--------------------|-------|---------|------|------|--------------------|--|
| C     | Calibrated for Specific Gravity  |  | Size    | GPM | LPM | SCFM | Nm <sup>3</sup> /h | Size  | GPM     | LPM  | SCFM | Nm <sup>3</sup> /h |  |
| E     | Non-Standard Flow Rate   |  |         |     |     |      |                    |       |         |      |      |                    |  |
| ES    | Low Flow Rate (Below 2 GPM)  |  | 1/4     | 2   | 8   | 10   | 15                 | 2 1/2 | 60      | 240  | 600  | 1000               |  |
| H     | High Pressure Service (400 psig max.)                                  |  | 1/4     | 3   | 10  | 20   | 30                 | 2 1/2 | 100     | 400  | 800  | 1200               |  |
| I     | Compressed Gas Service   |  | 1/4     | 4   | 15  | 30   | 50                 | 2 1/2 | 150     | 600  | 1000 | 1500               |  |
|       |  |  |         |     |     |      |                    | 2 1/2 | 200     | 800  | 1200 | 2000               |  |
| R2    | Remote Readout, Brass (Mech. Ind.)                                     |  |         |     |     |      |                    |       |         |      |      |                    |  |
| R3    | Remote Readout, 316 SS (Mech. Ind.)                                    |  | 1/2     | 2   | 8   | 10   | 15                 | 3     | 200     | 800  | 1000 | 1500               |  |
| RW3   | Digital Display Flow Rate & Total (non-linear 4-20mA signal)           |  | 1/2     | 3   | 10  | 20   | 30                 | 3     | 300     | 1000 | 2000 | 3000               |  |
|       |  |  | 1/2     | 4   | 15  | 30   | 50                 | 3     | 400     | 1500 | 3000 | 5000               |  |
| RW3-1 | Digital Display Flow Rate & Total (linear 4-20mA signal +Hart)         |  | 1/2     | 6   | 25  | 40   | 80                 | 3     | 500     | 2000 | 4000 | 6000               |  |
|       |  |  | 1/2     | 10  | 40  | 60   | 100                |       |         |      |      |                    |  |
| RW3-2 | Digital Display Flow Rate & Total +Alarm (w/non-linear 4-20mA signal)  |  | 3/4     | 6   | 25  | 60   | 100                | 4     | 300     | 1000 | 1500 | 50                 |  |
|       |  |  | 3/4     | 10  | 40  | 100  | 150                | 4     | 400     | 1500 | 3000 | 100                |  |
| RW3-3 | Digital Display Flow Rate & Total +Alarm (linear 4-20mA signal +Hart)  |  | 3/4     | 15  | 60  | 150  | 200                | 4     | 600     | 2400 | 5000 | 150                |  |
|       |  |  | 3/4     | 20  | 80  | 200  | 300                | 4     | 800     | 3000 | 6000 | 200                |  |
| RW3-4 | Digital Display Flow Rate & Total +Modbus (linear 4-20mA signal +Hart) |  | 1       | 15  | 60  | 150  | 250                | 5     | 300     | 1000 | 1500 | 50                 |  |
|       |  |  | 1       | 20  | 80  | 200  | 400                | 5     | 400     | 1500 | 3000 | 100                |  |
| V     | High Viscosity Service (5-500 cps)                                     |  | 1       | 30  | 120 | 300  | 500                | 5     | 600     | 2400 | 5000 | 150                |  |
|       |  |  | 1       | 40  | 150 | 400  | 600                | 5     | 800     | 3000 | 6000 | 200                |  |

## Low Flow Rates – Option ES

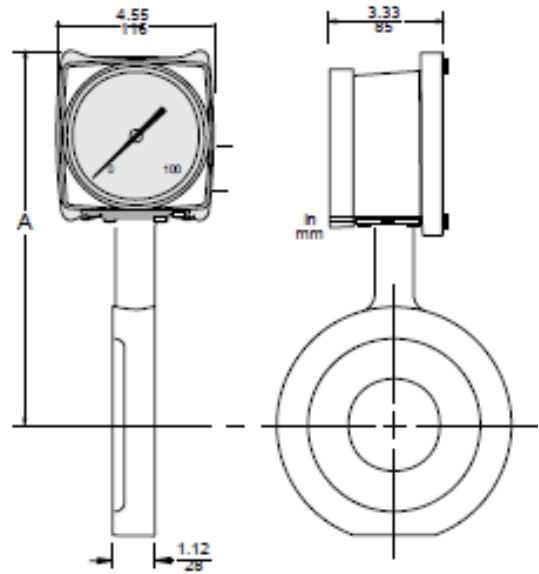
| Size | GPH | l/h | cc/m | 1 1/2 | 30  | 120 | 300  | 500  | 6 | 600  | 2400  | 3000  | 100 |
|------|-----|-----|------|-------|-----|-----|------|------|---|------|-------|-------|-----|
| 1/2  | 4   | 15  | 200  | 1 1/2 | 40  | 150 | 400  | 600  | 6 | 800  | 3000  | 5000  | 150 |
| 1/2  | 6   | 20  | 300  | 1 1/2 | 60  | 240 | 600  | 1000 | 6 | 1000 | 4000  | 8000  | 250 |
| 1/2  | 10  | 40  | 400  | 1 1/2 | 100 | 400 | 800  | 1200 | 6 | 2000 | 8000  | 15000 | 400 |
| 1/2  | 15  | 60  | 600  | 2     | 40  | 150 | 400  | 600  | 8 | 600  | 2400  | 5000  | 150 |
| 1/2  | 20  | 80  | 1000 | 2     | 60  | 240 | 600  | 1000 | 8 | 1000 | 4000  | 8000  | 250 |
| 1/2  | 30  | 120 | 2000 | 2     | 100 | 400 | 800  | 1200 | 8 | 2000 | 8000  | 15000 | 400 |
| 1/2  | 40  | 150 | 3000 | 2     | 150 | 600 | 1000 | 1500 | 8 | 3000 | 12000 | 20000 | 600 |
| 1/2  | 60  | 240 | 4000 | 2     | 200 | 800 | 1200 | 2000 |   |      |       |       |     |
| 1/2  | 100 | 400 | 6000 |       |     |     |      |      |   |      |       |       |     |

Note: Available with 1/2" 7000 Series Only

## 7000 Series – 1/4" to 3" Connections



## 8000 Series – 1/2" to 8" Connection



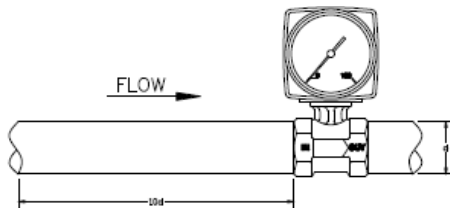
### Dimensions

| Nominal Sizes |     | Series 7000 – A |     | Series 8000 - A |     |
|---------------|-----|-----------------|-----|-----------------|-----|
| In            | mm  | In              | mm  | in              | mm  |
| 1/4           | 08  | 5.95            | 151 | n/a             | n/a |
| 1/2           | 15  | 5.95            | 151 | 6.62            | 168 |
| 3/4           | 20  | 5.95            | 151 | 7.06            | 179 |
| 1             | 25  | 6.07            | 154 | 7.25            | 184 |
| 1 1/2         | 40  | 6.39            | 162 | 7.81            | 198 |
| 2             | 50  | 6.80            | 172 | 8.00            | 203 |
| 2 1/2         | 65  | n/a             | n/a | 8.54            | 217 |
| 3             | 80  | 7.48            | 190 | 8.87            | 225 |
| 4             | 100 | n/a             | n/a | 9.95            | 252 |
| 5             | 125 | n/a             | n/a | 10.36           | 263 |
| 6             | 150 | n/a             | n/a | 11.05           | 280 |
| 8             | 200 | n/a             | n/a | 12.30           | 311 |

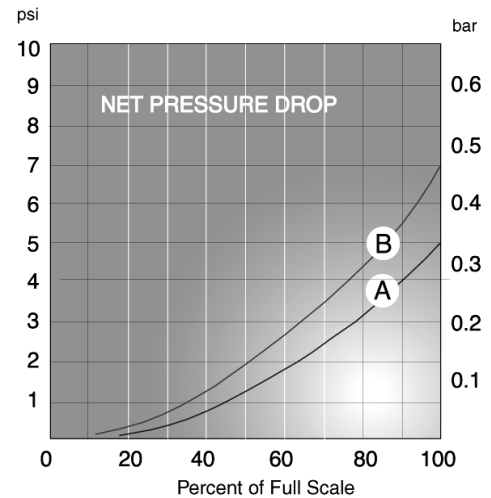
Note: Dimensions are based on bronze meters.

### Piping Requirements

The site selected should provide at least 10 pipe diameters of straight meter sized pipe between the meter inlet and any upstream fitting such as elbow, tee or valve.



### Pressure Drop Characteristics



Curve A – Bronze Bellows  
Curve B – Monel, SS, Inconel Bellows

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