

## DYNAMETERS Clamp-on Doppler Flow Meter

**Series DMDF1B** Enhanced Ultrasonic Doppler Flow meters measure solids-bearing or aerated liquids in metal or plastic pipes. Proprietary circuitry allows this instrument to operate with lower concentrations of suspended solids than any competitive Doppler flow meter--expanding the instrument's range of applications and reliability. Clamp-on transducers permit the instrument to be installed in minutes without interrupting system pressure or flow.

In addition, no pressure head-loss is created; therefore system pump horsepower requirements are reduced. The DMDF1 transmitter has a full keypad designed for simple field setup and application versatility. The four-line, backlit, alphanumeric display shows instantaneous flow rate and totalized flows in a variety of user selectable engineering units.



### Features:

- ◆ The system can be field configured to pipe sizes ranging from 1 to 120 inches (12 to 3050mm).
- ◆ Non-fouling transducer is immune to build-up of grease, paraffin and other coating materials.
- ◆ Solid-state measurement never requires recalibration and is virtually maintenance-free.
- ◆ Operates with relatively clean liquids as well as liquids with concentrations of suspended solids or aeration.
- ◆ Do not require long straight runs of pipe.
- ◆ Industry standard outputs allow direct interface to loggers and controls systems.

### Applications:

- ◆ Raw sewage
- ◆ Return activated sludge
- ◆ Waste activated sludge
- ◆ Ground water
- ◆ Pulp and paper slurries
- ◆ Chemical slurries
- ◆ Drainage
- ◆ Mining recirculation
- ◆ Animal renderings

## Technical Parameters:

### Transmitter

| DESCRIPTION             | SPECIFICATION                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| POWER REQUIREMENTS      | 220VAC $\pm$ 10%, 50HZ $\pm$ 1Hz, (Opt) 24VDC                                                                                 |
| OUTPUTS                 | 4-20 mA, 600 Ohms max., isolated; frequency pulse output                                                                      |
| INDICATORS              | Power, Signal Strength, Flow Analyzer, Fault, Over-range, Read, Low Battery, Charge                                           |
| DISPLAY                 | 4 line x 8 character alphanumeric LCD (backlit). Digit height 0.2 inches [5 mm], 6 digit rate, 6 digit totalizer (resettable) |
| UNITS:                  | User configured                                                                                                               |
| RATE U.S. [METRIC]      | FPS, GPM, MGD [MPS, LPM, M3/hr]                                                                                               |
| TOTALIZER U.S. [METRIC] | Gallons [liters, M3]                                                                                                          |
| AMBIENT CONDITIONS      | -22 to 160°F[-30 to 70 °C ], 0-95% relative humidity, non-condensing.                                                         |
| ENCLOSURE               | NEMA 4X,[IP-65] , aluminum alloy and ABS                                                                                      |
| NON-LINEARITY(ACCURACY) | $\pm$ 2% Full Scale                                                                                                           |
| SENSITIVITY             | 0.4% of Full Scale                                                                                                            |
| REPEATABILITY           | 0.4% of Full Scale                                                                                                            |
| FLOW RANGE              | 0.3 m/s—6.0m/s depends on applications                                                                                        |
| RESPONSE TIME           | 5-50 seconds, user configured, to 90% of value, step change in flow.                                                          |
| TOTALIZAR               | Six digits, multiply 10E1—10E3                                                                                                |
| HOUSING MATERIAL        | (Std) Aluminum alloy and epoxy resin                                                                                          |

### Transducer

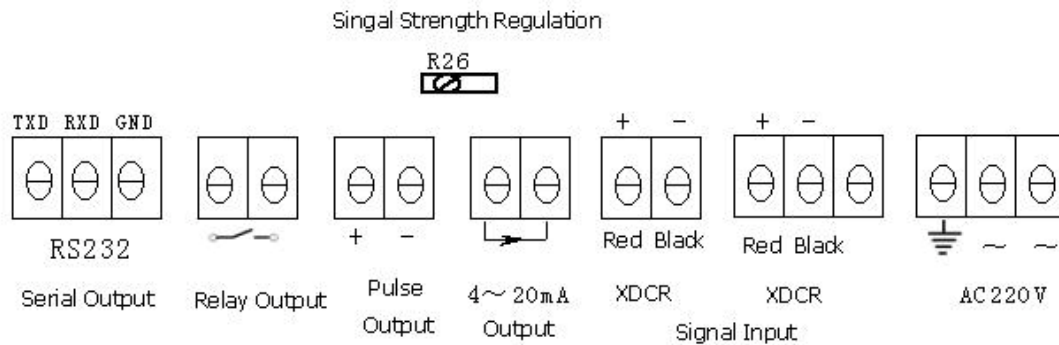
| DESCRIPTION          | SPECIFICATION                                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LIQUID REQUIREMENTS  | 25 ppm of 30 micron size* suspended solids of entrained gas (air). *Less than this minimum will require transducer mount downstream of a 90°elbow or obstruction. |
| CABLE                | (Std) 6 meters cable                                                                                                                                              |
| PIPE SIZES           | (Std) 1-120 inches [25 - 3050 mm]                                                                                                                                 |
| LIQUID TEMPERATURE   | (Std) -40°F to 250°F [-40°C to 121°C ]                                                                                                                            |
| ENVIRONMENT HUMIDITY | 45%~85%                                                                                                                                                           |
| ENVIRONMENT TEMP.    | -10°C~50°C                                                                                                                                                        |

## Terminal Wiring

The DMDF1B clamp-on Doppler flow meter should be powered with  $220 \pm 10\%$  VAC.

To access terminal strips for electronic connection, please loosen the two screws in the enclosure cover and then open the cover. Guide the transducer terminations through the transmitter conduit hole located in the bottom-center of the enclosure. Connect the appropriate wires to the corresponding screw terminals in the transmitter.

### Transmitter Power and Output Connections:



**Figure1 Transmitter Connection Diagram**

1. Connect line power to the screw terminals AC, GND or DC in the transmitter.  
DC Power connection: The DMDF1 fixed transmitter may be operated from a 9-28 VDC source, as long as the source is capable of supplying a minimum of 3 Watts.  
NOTE: This instrument requires clean electrical line power. Do not operate this unit on circuits with noisy components (i.e., fluorescent lights, relays, compressors, or variable frequency drives). It is recommended not to run line power with other signal wires within the same wiring tray or conduit.
2. Connect the four terminals on transducers: XDCR (+ - G) and XDCR (+ - G) to the corresponding terminals (the two transducers are the same, no up and down).
3. Connect the 4~20mA wires to the appropriate (4~20mA + -) (The 4-20 mA output do not requires power from an external DC power supply).
4. RS232 or RS485: connect terminals to corresponding terminals.