

Blue-White[®]

Industries, Ltd.

DigiFlo Digital Paddlewheel Meters

Engineering and Technical Data

F-2000

Machined In-line Fitting
Remote Mount Display
Three Display Options:

- Rate & Total Display Only
- Rate, Total, Analog output
- Rate, Total, Process Control

Four Connection Options:
Slip glue, F/NPT, F/BSPT,
Socket Fusion, Butt Fusion.



Features:

- High accuracy digital paddlewheel technology.
- 3/8" thru 2" and 16mm thru 63mm pipe sizes.
- Flow rate from .4 to 300 GPM (1 to 1000 LPM)
- Rate and total flow display.
- Optional Process Control alarm or batch processing relay.
- Optional 4-20mA or 0-10VDC output.
- Large, 8 digit LCD display, up to 4 decimal places.
- Remote mount display on panel, pipe or wall.
- Very low pressure drop.
- Total reset function can be disabled.
- Front panel security lock-out.
- Field programmable.

Specifications:

Max. Psi (bar):300 PSI (20 bar) @ 70° F (21° C)
Max. fluid temp.:
 (PP and PVDF adapters): 200° F (93° C) @ 0 PSI
 (PVC adapters): 140° F (60° C) @ 0 PSI
Max. ambient temp.:14° to 110° F / -10° to 43° C
Full scale accuracy: +/- 1%
Max pressure drop:8 PSI (varies per model)

Power input:6-24VDC
 Model RT units only: 4 AA batteries or AC/DC transformer
 All units: AC/DC transformer
Signal Distance: AC sine wave sensor = 200 ft (60 m)
 Optional Hall Effect sensor = 1 mile (1.6 km)
Signal Cable:3 conductor shielded. Included 25 ft. (7.6 m)
Enclosure:NEMA 4X (IP56)
Approx ship wt:5 lb. (2.3 kg)

Materials of Construction:

Pipe fitting body:.....Available in Polypropylene, PVDF
Pipe fitting adapters:Available in Polypropylene, PVDF, PVC
Union Nuts:.....Anodized Aluminum

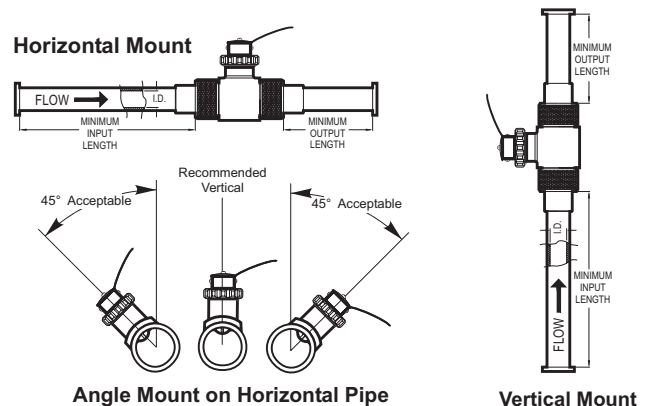
Sensor, paddlewheel, axle: ..PVDF
Sensor O-ring seals:.....Viton[®] (optional EP)

Installation Requirements:

Minimum Straight Pipe Length Requirements

The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

Type Of Disturbance	Minimum Inlet Pipe Length	Minimum Outlet Pipe Length
Flange	10 X Pipe I.D.	5 X Pipe I.D.
Reducer	15 X Pipe I.D.	5 X Pipe I.D.
90° Elbow	20 X Pipe I.D.	5 X Pipe I.D.
Two Elbows -1 Direction	25 X Pipe I.D.	5 X Pipe I.D.
Two Elbows -2 Directions	40 X Pipe I.D.	5 X Pipe I.D.
Pump Or Gate Valves	50 X Pipe I.D.	5 X Pipe I.D.



Mounting location

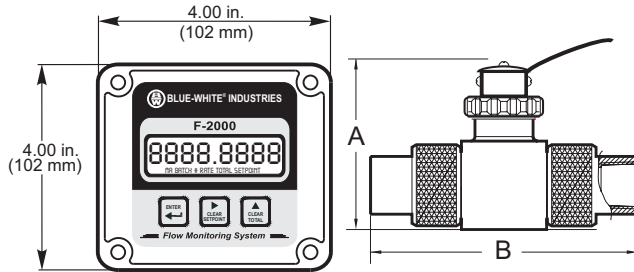
- The meter is designed to withstand outdoor conditions. A cool, dry location, where the unit can be easily serviced is recommended.
- The meter can be mounted on horizontal or vertical runs of pipe. Mounting at the vertical (twelve o'clock) position on horizontal pipe is recommended. Mounting anywhere around the diameter of vertical pipe is acceptable, however, the pipe must be completely full of water at all times. Back pressure is essential on downward flows. See the minimum straight length of pipe requirement chart above.
- The meter can accurately measure flow from either direction.

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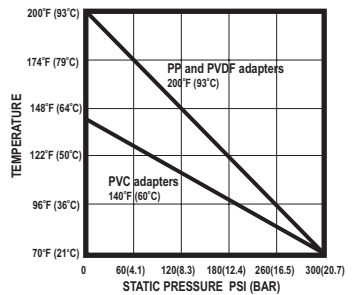
Dimensions:



Pipe Size	A	B
3/8" (16mm)	7-3/8" (187)	4-1/4" (108)
1/2" (20mm)	7-3/8" (187)	4-1/4" (108)
3/4" (25mm)	7-3/8" (187)	4-1/4" (108)
1" (32mm)	7-3/8" (187)	4-1/4" (108)
1-1/2" (50mm)	9-3/8" (238)	5-1/16" (129)
2" (63mm)	11-3/8" (289)	5-3/8" (137)

Inches (mm)

Maximum Temperature vs. Pressure



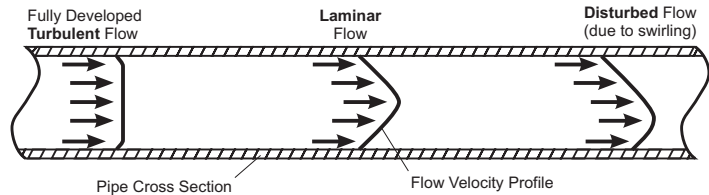
Flow Stream Requirements:

Measuring accuracy requires a fully developed **turbulent** flow profile. Pulsating, swirling and other disruptions in the flow stream will effect accuracy. Flow conditions with a **Reynolds Number** greater than 4000 will result in a fully developed **turbulent** flow. A Reynolds Number less than 2000 is **laminar** flow and may result in inaccurate readings.

$$REYNOLDS \ NUMBER = \frac{3160 \times Q \times G}{D \times V}$$

Where:

- Flow rate of the fluid in GPM = Q
- Specific gravity of the fluid = G
- Pipe inside diameter in inches = D
- Fluid viscosity in centipoise = V



Model Number Matrix:

Display Function		RT P 2 50 P G 2 LM 1		Calibration Flow Range	
RT = Rate and Total flow				1 = Range 1 (see pipe data)	
AO = Rate, Total, 4-20mA				2 = Range 2 (see pipe data)	
PC = Rate, Total, Relay				3 = Range 3 (see pipe data)	
AP = Rate, Total, 4-20mA, relay				4 = Range 4 (see pipe data)	
Display Mount / Sensor Type		Fitting Material		Calibration Units	
S = Display mounted on AC coil sensor		P = Polypropylene		GM = U.S. Gal per min	
P = Display remote mount, AC coil sensor		K = PVDF		GH = U.S. Gal per hour	
H = Display remote mount, Hall Effect sensor				OM = U.S. Oz per min	
Power		Pipe Size		FM = Cubic Ft per min	
B = Battery holder with 4 AA cells (RT models only)		38= 3/8" 01= 16mm		AD = Acre Ft per day	
1 = U.S. Transformer, 115V60Hz/15Vdc, NEMA5/15 plug		50= 1/2" 02= 20mm		LM = Liters per min	
2 = Europe Transformer, 230V50Hz/15Vdc, CEE 7/VII plug		75= 3/4" 03= 25mm		LH = Liters per hour	
3 = U.S. Transformer, 230V60Hz/15Vdc, NEMA 5/15 plug		10= 1" 04= 32mm		MH = Cubic Mtr per hour	
4 = U.S. Transformer, 115V60Hz and Battery back-up		15= 1-1/2" 05= 50mm		IM = Imperial Gal per min	
5 = Europe Transformer, 230V50Hz and Battery back-up		20= 2" 06= 63 mm		IH = Imperial Gal per hour	
6 = U.S. Transformer, 230V60Hz and Battery back-up					
X = No Selection (Customer must supply power)					
				Pipe Fitting type and Material	
				* = U.S. F/NPT	
				G = PVC inch Slip weld/glue	
				W = PVC mm Slip weld/glue	
				U = British female BSPT	
				S = Inch Socket Fusion	
				M = Metric (mm) Socket Fusion	
				B = Inch Butt Fusion	
				C = Metric (mm) Butt Fusion	
				Note: * equals no selection	

Pipe Size, Flow Range and Display Model Options:

230V50Hz AC Models with Polypropylene Pipe Fitting

Models with PP Adapter with BSPT Threads Display in Imperial Gallons per Minute

Pipe Size F/BSPT	GPM flow Range	RATE & TOTAL DISPLAY Model Number	ANALOG OUTPUT Model Number	PROCESS CONTROL Model Number
3/8"	.8 to 8	RTP238PU1GM1	AOP238PU1GM1	PCP238PU1GM1
3/8"	.4 to 4	RTP238PU2GM2	AOP238PU2GM2	PCP238PU2GM2
1/2"	2 to 20	RTP250PU1GM1	AOP250PU1GM1	PCP250PU1GM1
1/2"	.5 to 5	RTP250PU2GM2	AOP250PU2GM2	PCP250PU2GM2
3/4"	4 to 40	RTP275PU1GM1	AOP275PU1GM1	PCP275PU1GM1
3/4"	.8 to 8	RTP275PU2GM2	AOP275PU2GM2	PCP275PU2GM2
1"	6 to 60	RTP210PU1GM1	AOP210PU1GM1	PCP210PU1GM1
1"	2 to 20	RTP210PU2GM2	AOP210PU2GM2	PCP210PU2GM2
1-1/2"	1 to 10	RTP215PU1GM1	AOP215PU1GM1	PCP215PU1GM1
1-1/2"	6 to 60	RTP215PU2GM2	AOP215PU2GM2	PCP215PU2GM2
1-1/2"	15 to 150	RTP215PU3GM3	AOP215PU3GM3	PCP215PU3GM3
2"	2 to 20	RTP220PU1GM1	AOP220PU1GM1	PCP220PU1GM1
2"	6 to 60	RTP220PU2GM2	AOP220PU2GM2	PCP220PU2GM2
2"	15 to 150	RTP220PU3GM3	AOP220PU3GM3	PCP220PU3GM3
2"	30 to 300	RTP220PU4GM4	AOP220PU4GM4	PCP220PU4GM4

Models with PVC Adapter with MM slip glue/weld Display in Liters per Minute.

Pipe Size Metric	LPM flow Range	RATE & TOTAL DISPLAY Model Number	ANALOG OUTPUT Model Number	PROCESS CONTROL Model Number
16 mm	3 to 30	RTP101PW1LM1	AOP101PW1LM1	PCP101PW1LM1
16 mm	1 to 10	RTP101PW2LM2	AOP101PW2LM2	PCP101PW2LM2
20 mm	7 to 70	RTP102PW1LM1	AOP102PW1LM1	PCP102PW1LM1
20 mm	2 to 20	RTP102PW2LM2	AOP102PW2LM2	PCP102PW2LM2
25 mm	15 to 150	RTP103PW1LM1	AOP103PW1LM1	PCP103PW1LM1
25 mm	3 to 30	RTP103PW2LM2	AOP103PW2LM2	PCP103PW2LM2
32 mm	25 to 250	RTP104PW1LM1	AOP104PW1LM1	PCP104PW1LM1
32 mm	7 to 70	RTP104PW2LM2	AOP104PW2LM2	PCP104PW2LM2
50 mm	4 to 40	RTP105PW1LM1	AOP105PW1LM1	PCP105PW1LM1
50 mm	25 to 250	RTP105PW2LM2	AOP105PW2LM2	PCP105PW2LM2
50 mm	60 to 600	RTP105PW3LM3	AOP105PW3LM3	PCP105PW3LM3
63 mm	7 to 70	RTP106PW1LM1	AOP106PW1LM1	PCP106PW1LM1
63 mm	25 to 250	RTP106PW2LM2	AOP106PW2LM2	PCP106PW2LM2
63 mm	60 to 600	RTP106PW3LM3	AOP106PW3LM3	PCP106PW3LM3
63 mm	100 to 1000	RTP106PW4LM4	AOP126PG4LM4	PCP106PW4LM4