

Blue-White[®]

Industries, Ltd.

DigiFlo Digital Paddlewheel Meters

Engineering and Technical Data

F-2000

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

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



Features:

- High accuracy digital paddlewheel technology.
- 3/8", 1/2", 3/4", 1", 1-1/2", and 2" male pipe threads.
- Flow rate from .4 to 200 GPM (1 to 700 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. working pressure:300 PSI (20 bar) @ 70° F (21° C)
 Max. fluid temperature:200° F (93° C) @ 0 PSI
 Max. ambient temperature: ..14° to 110° F / -10° to 43° C
 Full scale accuracy:+/- 1%
 Power requirement:16-24VDC
 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)
 Max pressure drop: 8 PSI (varies per model)
 Enclosure: NEMA 4X (IP56)
 Approx ship wt: 2 lb. (.91 kg)

Materials of Construction:

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

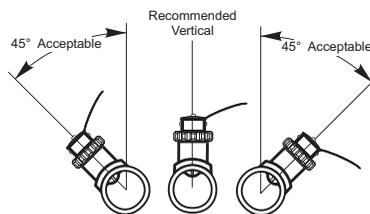
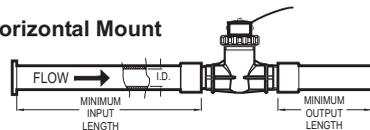
Installation Requirements:

Minimum Straight Pipe Length Requirements

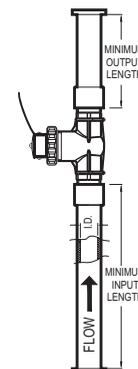
The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe as far as possible from any disturbances. The distance required for accuracy will depend on the type of disturbance.

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.

Horizontal Mount



Angle Mount on Horizontal Pipe



Vertical Mount

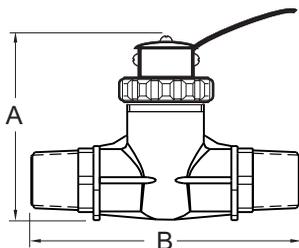
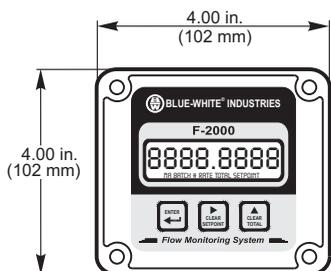
Mounting location

- 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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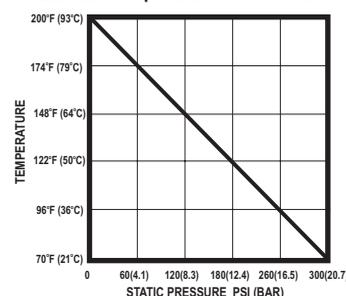
Dimensions:



Pipe Size	A	B
3/8"	3-3/4" (95)	4-3/4" (121)
1/2"	3-3/4" (95)	5-1/8" (130)
3/4"	4" (102)	5-1/4" (133)
1"	4" (102)	5-5/8" (143)
1-1/2"	4-1/2" (114)	6-1/2" (165)
2"	4-3/4" (121)	6-3/4" (171)

Inches (mm)

Maximum Temperature vs. Pressure



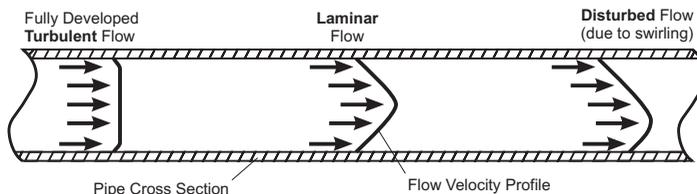
Flow Stream Requirements:

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.

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

Where:

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



Model Number Matrix:

Display Function		RT P 1 50 M1 GM 1				Calibration Flow Range	
RT = Rate and Total flow AO = Rate, Total, 4-20mA PC = Rate, Total, Relay AP = Rate, Total, 4-20mA, relay						1 = Range 1 (see pipe fitting range data) 2 = Range 2 (see pipe fitting range data) 3 = Range 3 (see pipe fitting range data) 4 = Range 4 (see pipe fitting range data) 5 = Range 5 (see pipe fitting range data) 6 = Range 6 (see pipe fitting range data)	
Display Mount / Sensor Type						Calibration Units	
S = Display mounted on AC coil sensor P = Display remote mount, AC coil sensor H = Display remote mount, Hall Effect sensor						GM = U.S. Gal per min GH = U.S. Gal per hour OM = U.S. Oz per min FM = Cubic Ft per min AD = Acre Ft per day LM = Liters per min LH = Liters per hour MH = Cubic Mtr per hour IM = Imperial Gal per min IH = Imperial Gal per hour	
Power						Pipe Fitting type and Material	
B = Battery holder with 4 AA cells 1 = U.S. Transformer, AC 115V60Hz/15Vdc, NEMA5/15 plug 2 = Europe Transformer, AC 230V50Hz/15Vdc, CEE 7/VII plug 3 = U.S. Transformer, AC 230V60Hz/15Vdc, NEMA 5/15 plug 4 = U.S. Transformer, 115V60Hz and Battery back-up 5 = Europe Transformer, 230V50Hz and Battery back-up 6 = U.S. Transformer, 230V60Hz and Battery back-up X = No Selection (Customer must supply power)		M1 = PP body Male NPT, flow range #1 M2 = PP body Male NPT, flow range #2 M3 = PP body Male NPT, flow range #3 M4 = PP body Male NPT, flow range #4 F1 = PVDF body Male NPT, flow range #1 F2 = PVDF body Male NPT, flow range #2 F3 = PVDF body Male NPT, flow range #3 F4 = PVDF body Male NPT, flow range #4					
		Pipe Size					
		38 = 3/8 inch 50 = 1/2 inch 75 = 3/4 inch 10 = 1 inch 15 = 1-1/2 inch 20 = 2 inch					

Pipe Size, Flow Range and Display Model Options:

115v AC Models with Polypropylene Pipe Fitting

Pipe Size M/NPT	GPM MODELS				LPM MODELS			
	GPM flow Range	RATE & TOTAL DISPLAY Model Number	ANALOG OUTPUT Model Number	PROCESS CONTROL Model Number	LPM flow Range	RATE & TOTAL DISPLAY Model Number	ANALOG OUTPUT Model Number	PROCESS CONTROL Model Number
3/8"	.8 to 8	RTP138M1GM1	AOP138M1GM1	PCP138M1GM1	3 to 30	RTP138M1LM1	AOP138M1LM1	PCP138M1LM1
3/8"	4 to 4	RTP138M2GM2	AOP138M2GM2	PCP138M2GM2	1 to 10	RTP138M2LM2	AOP138M2LM2	PCP138M2LM2
1/2"	2 to 20	RTP150M1GM1	AOP150M1GM1	PCP150M1GM1	7 to 70	RTP150M1LM1	AOP150M1LM1	PCP150M1LM1
1/2"	.5 to 5	RTP150M2GM2	AOP150M2GM2	PCP150M2GM2	2 to 20	RTP150M2LM2	AOP150M2LM2	PCP150M2LM2
3/4"	3 to 30	RTP175M1GM1	AOP175M1GM1	PCP175M1GM1	11 to 110	RTP175M1LM1	AOP175M1LM1	PCP175M1LM1
3/4"	.8 to 8	RTP175M2GM2	AOP175M2GM2	PCP175M2GM2	3 to 30	RTP175M2LM2	AOP175M2LM2	PCP175M2LM2
1"	5 to 50	RTP110M1GM1	AOP110M1GM1	PCP110M1GM1	20 to 200	RTP110M1LM1	AOP110M1LM1	PCP110M1LM1
1"	2 to 20	RTP110M2GM2	AOP110M2GM2	PCP110M2GM2	7 to 70	RTP110M2LM2	AOP110M2LM2	PCP110M2LM2
1-1/2"	4 to 40	RTP115M1GM1	AOP115M1GM1	PCP115M1GM1	15 to 150	RTP115M1LM1	AOP115M1LM1	PCP115M1LM1
1-1/2"	6 to 60	RTP115M2GM2	AOP115M2GM2	PCP115M2GM2	25 to 250	RTP115M2LM2	AOP115M2LM2	PCP115M2LM2
1-1/2"	10 to 100	RTP115M3GM3	AOP115M3GM3	PCP115M3GM3	40 to 400	RTP115M3LM3	AOP115M3LM3	PCP115M3LM3
2"	4 to 40	RTP120M1GM1	AOP120M1GM1	PCP120M1GM1	15 to 150	RTP120M1LM1	AOP120M1LM1	PCP120M1LM1
2"	6 to 60	RTP120M2GM2	AOP120M2GM2	PCP120M2GM2	25 to 250	RTP120M2LM2	AOP120M2LM2	PCP120M2LM2
2"	10 to 100	RTP120M3GM3	AOP120M3GM3	PCP120M3GM3	40 to 400	RTP120M3LM3	AOP120M3LM3	PCP120M3LM3
2"	20 to 200	RTP120M4GM4	AOP120M4GM4	PCP120M4GM4	70 to 700	RTP120M4LM4	AOP120M4LM4	PCP120M4LM4