

Blue-White[®]

Industries, Ltd.

DigiFlo Digital Paddlewheel Meters

Engineering and Technical Data

F-2000

Saddle 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.
 - 1-1/2" thru 12" and 50mm thru 315mm pipe sizes.
- Flow rate from 15 to 8000 GPM (70 to 27000 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.
- No significant pressure drop.
- Total reset function can be disabled.
- Front panel security lock-out.
- Field programmable.

Specifications:

Pipe Requirements:

(Inch dimensions)IPS pipe size (ASTM-D-1785)
 (Metric dimensions)Metric pipe size (DIN 8062)
Max. Psi (bar):300 PSI (20 bar) @ 70° F (21° C)
Max. fluid temp.:PVDF saddle, 200° F (93° C) @ 0 PSI
PVC saddle, 140° F (60° C) @ 0 PSI
Max. ambient temp.:14° to 110° F / -10° to 43° C
Note: Temperature & Pressure ratings of meter only. Actual pipe rating may vary.
Max pressure drop:0 PSI (No significant pressure drop)

Full scale accuracy: +/- 1%

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:4 lb. (1.8 kg)

Materials of Construction:

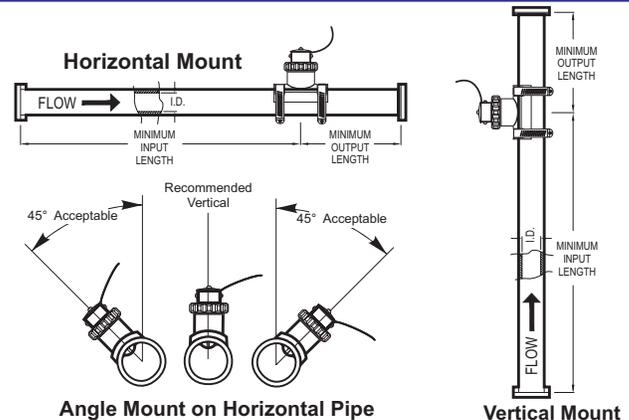
Saddle:PVDF or PVC
Sensor, paddlewheel, axle:PVDF
Sensor & saddle O-ring seals:Viton[®] (optional EP)
Pipe Clamp:300 series Stainless Steel

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

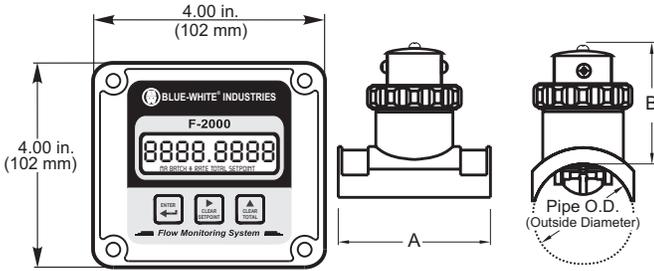
- The meter is designed to withstand outdoor conditions. A cool, dry location, where the unit can be easily serviced is recommended.
- The meter can be mounted on horizontal or vertical runs of pipe. Mounting at the vertical (twelve o'clock) position on horizontal pipe is recommended. Mounting anywhere 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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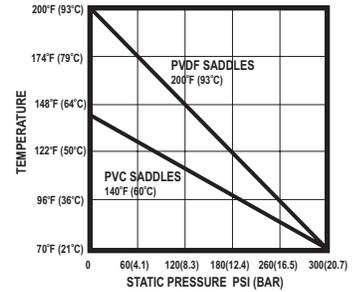
Dimensions:



Pipe Size	A	B
1-1/2" (50mm)	3-3/16" (81)	2-9/16" (65)
2" (63mm)	3-3/16" (81)	2-9/16" (65)
2-1/2" (75mm)	3-3/16" (81)	2-1/2" (64)
3" (90mm)	3-3/16" (81)	2-1/2" (64)
4" (110mm)	3-3/16" (81)	2-1/2" (64)
6" (160mm)	3-3/16" (81)	2-7/16" (62)
8" (200mm)	3-3/16" (81)	2-7/16" (62)
10" (250mm)	4-1/2" (114)	2-1/4" (57)
12" (315mm)	4-1/2" (114)	2-1/4" (57)

Inches (mm)

Maximum Temperature vs. Pressure



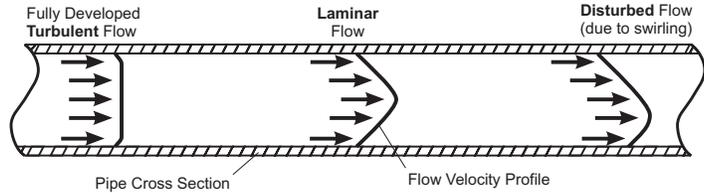
Flow Stream Requirements:

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 centepoise = V



Model Number Matrix:

RT P 1 40 A4 GM 1

Display Function

RT = Rate and Total flow
 AO = Rate, Total, 4-20mA
 PC = Rate, Total, Relay
 AP = Rate, Total, 4-20mA, relay

Display Mount / Sensor Type

S = Display mounted on AC coil sensor
 P = Display remote mount, AC coil sensor
 H = Display remote mount, Hall Effect sensor

Power

B = Battery holder with 4 AA cells (RT models only)
 1 = U.S. Transformer, 115V60Hz/15Vdc, NEMA5/15 plug
 2 = Europe Transformer, 230V50Hz/15Vdc, CEE 7/II plug
 3 = U.S. Transformer, 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)

Pipe Size

15 = 1.5"	05 = 50mm
20 = 2"	06 = 63mm
25 = 2.5"	08 = 75mm
30 = 3"	09 = 90mm
40 = 4"	11 = 110mm
60 = 6"	16 = 160mm
80 = 8"	20 = 200mm
100 = 10"	25 = 250mm
120 = 12"	31 = 315mm

Pipe size, type and saddle material

IPS SCH40 PIPE
 K4 = 1.5", 2", 3" PVDF
 A4 = 2.5", 4", 6", 8", 10", 12" PVC

IPS SCH80 PIPE
 K8 = 1.5", 2", 3" PVDF
 A8 = 2.5", 4", 6", 8", 10", 12" PVC

METRIC PN 10 PIPE
 K0 = 50, 63, 90mm PVDF
 A0 = 75, 110, 160, 200, 250, 315mm PVC

METRIC PN 16 PIPE
 K6 = 50, 63, 90mm PVDF
 A6 = 75, 110, 160, 200mm PVC

Calibration Flow Range

1 = Range 1
 (Saddle units are offered in only one range)

Calibration Units

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

Pipe Size, Flow Range and Display Model Options:

Models for U.S. IPS sch40 Pipe (ASTM 1785)

Pipe Size	GPM Flow Range	Rate & Total Model Number	Analog Output Model Number	Process Control Model Number
1.5"	15 to 150	RTP115K4GM1	AOP115K4GM1	PCP115K4GM1
2"	30 to 300	RTP120K4GM1	AOP120K4GM1	PCP120K4GM1
2.5"	40 to 400	RTP125A4GM1	AOP125A4GM1	PCP125A4GM1
3"	60 to 600	RTP130K4GM1	AOP130K4GM1	PCP130K4GM1
4"	100 to 1000	RTP140A4GM1	AOP140A4GM1	PCP140A4GM1
6"	250 to 2500	RTP160A4GM1	AOP160A4GM1	PCP160A4GM1
8"	400 to 4000	RTP180A4GM1	AOP180A4GM1	PCP180A4GM1
10"	600 to 6000	RTP1100A4GM1	AOP1100A4GM1	PCP1100A4GM1
12"	800 to 8000	RTP1120A4GM1	AOP1120A4GM1	PCP1120A4GM1

Models for METRIC PN10 Pipe (DIN 8062)

Pipe Size	LPM Flow Range	Rate & Total Model Number	Analog Output Model Number	Process Control Model Number
50mm	70 to 700	RTP105K0LM1	AOP105K0LM1	PCP105K0LM1
63mm	110 to 1100	RTP106K0LM1	AOP106K0LM1	PCP106K0LM1
75mm	150 to 1500	RTP108A0LM1	AOP108A0LM1	PCP108A0LM1
90mm	230 to 2300	RTP109K0LM1	AOP109K0LM1	PCP109K0LM1
110mm	350 to 3500	RTP111A0LM1	AOP111A0LM1	PCP111A0LM1
160mm	720 to 7200	RTP116A0LM1	AOP116A0LM1	PCP116A0LM1
200mm	1150 to 11500	RTP120A0LM1	AOP120A0LM1	PCP120A0LM1
250mm	1700 to 17000	RTP125A0LM1	AOP125A0LM1	PCP125A0LM1
315mm	2700 to 27000	RTP131A0LM1	AOP131A0LM1	PCP131A0LM1