

# DIGITAL PADDLEWHEEL METERS



FP2011-RT shown smaller than actual size.

FP2004-RT shown smaller than actual size.

## FP2000 Series



Optional

- ✓ ±2% Accuracy Digital Paddlewheel Technology
- ✓ Integral 6 Digit Display
- ✓ Models Available for Rate, Total or Rate and Total Flow
- ✓ For Pipe Sizes from 10 to 51 mm (3/8 to 2"), 0.4 to 200 GPM
- ✓ Long Life Battery Operation
- ✓ Low Pressure Drop Design
- ✓ Available with Polypropylene or PVDF Construction

The FP2000 Series is a family of economical paddlewheel sensors with integral 6-digit display. The FP2000-R models are rate indicators, while the FP2000-RT

models indicate rate and total flow. Also available, the FP2000-T display the total flow only. These units are battery power, with two "AAA" size batteries lasting up to a year. The FP2000 units feature a PVDF paddlewheel, with either polypropylene or PVDF piping.

Measuring accuracy requires a fully developed turbulent flow profile. Pulsating, swirling and other disruptions in the flow stream will affect 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 Equation:

$$\text{Reynolds Number} = (3160 \times Q \times G) / (D \times V)$$

Where:

Q=Flow rate of the fluid in GPM

G=Specific gravity of the fluid

D=Pipe inside diameter in inches

V=Fluid viscosity in centipoise

## SPECIFICATIONS

**Maximum Working Pressure:** 20 bar (300 psi) at 21°C (70°F)

**Maximum Fluid Temperature:** 93°C (200°F) at 0 psi

**Maximum Ambient Temperature:** -10 to 43°C (14 to 110°F)

**Full Scale Accuracy:** ±2%

**Power Requirement:** 2 "AAA" batteries (included)

**Enclosure:** NEMA 4X (IP56)

**Maximum Pressure Drop:** 0.6 bar (8 psi) (varies per model)

**Approximate Shipping Wt:** 0.91 kg (2 lb)

**Materials of Construction**

**Pipe Fitting:**

FP2000 Series: Polypropylene

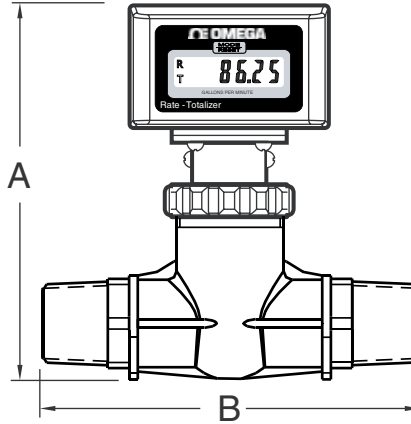
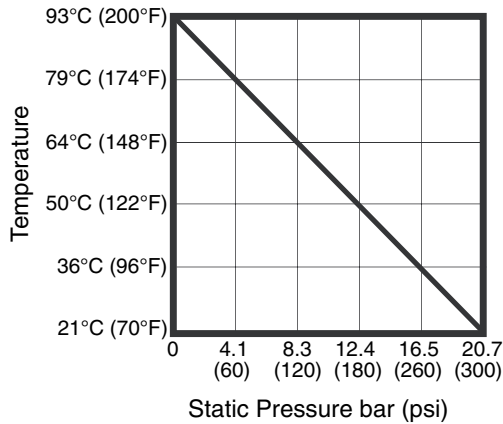
FP2100 Series: PVDF

**Sensor, Paddlewheel, Axle:** PVDF

**Sensor O-ring seals:** FKM

**Enclosure:** ABS

Max Temperature vs. Pressure



Dimensions: mm (inch)

Pipe Size	A	B
3/8"	137 (5 3/8)	121 (4 3/4)
1/2"	137 (5 3/8)	130 (5 1/8)
3/4"	143 (5 5/8)	133 (5 1/4)
1"	143 (5 5/8)	143 (5 5/8)
1 1/2"	156 (6 1/8)	165 (6 1/2)
2"	162 (5 5/8)	171 (6 3/4)

### 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 ID	5 x pipe ID
Reducer	15 x pipe ID	5 x pipe ID
90° Elbow	20 x pipe ID	5 x pipe ID
Two Elbows—1 Direction	25 x pipe ID	5 x pipe ID
Two Elbows—2 Directions	40 x pipe ID	5 x pipe ID
Pump or Gate Valves	50 x pipe ID	5 x pipe ID

### To Order

Rate only-PP	Rate only-PVDF	Rate/Total-PP	Rate/Total-PVDF	Range GPM	Connection MNPT
Model No.	Model No.	Model No.	Model No.		
FP2001-R	FP2101-R	FP2001-RT	FP2101-RT	0.4 to 4	3/8
FP2002-R	FP2102-R	FP2002-RT	FP2102-RT	0.8 to 8	3/8
FP2003-R	FP2103-R	FP2003-RT	FP2103-RT	0.5 to 5	1/2
FP2004-R	FP2104-R	FP2004-RT	FP2104-RT	2 to 20	1/2
FP2005-R	FP2105-R	FP2005-RT	FP2105-RT	0.8 to 8	3/4
FP2006-R	FP2106-R	FP2006-RT	FP2106-RT	3 to 30	3/4
FP2007-R	FP2107-R	FP2007-RT	FP2107-RT	2 to 20	1
FP2008-R	FP2108-R	FP2008-RT	FP2108-RT	5 to 50	1
FP2009-R	FP2109-R	FP2009-RT	FP2109-RT	4 to 40	1 1/2
FP2010-R	FP2110-R	FP2010-RT	FP2110-RT	6 to 60	1 1/2
FP2011-R	FP2111-R	P2011-RT	FP2111-RT	10 to 100	1 1/2
FP2012-R	FP2112-R	P2012-RT	FP2112-RT	4 to 40	2
FP2013-R	FP2113-R	P2013-RT	FP2113-RT	6 to 60	2
FP2014-R	FP2114-R	P2014-RT	FP2114-RT	10 to 100	2
FP2015-R	FP2115-R	P2015-RT	FP2115-RT	20 to 200	2

### Accessory

Model No.	Description
MN2400-12	12-pack "AAA" replacement batteries

Comes complete with operator's manual and 2 "AAA" batteries.

For units with a total display only change the "-R" in the rate only model number to a "-T", for additional cost.

For 5-point NIST certificate, add suffix "-NIST", for additional cost.

For units factory programmed in liters add "-LITERS" to the model number, no additional cost.

**Ordering Examples:** FP2003-R, polypropylene paddlewheel, 0.5 to 5 GPM with integral rate display.

FP2005-RT, polypropylene paddlewheel, 0.8 to 8 GPM with integral rate and total display.