



# PADDLEWHEEL FLOW SENSOR

FPB100 Series  
Starts at

**\$441**



- ✓ 4 to 20 mA, Switch, or Pulse Divider Output
- ✓ Low Flow Capabilities from 0.1m/s (0.3 ft/s)
- ✓ Polypropylene or PVDF Material
- ✓ Installs into Pipe Sizes DN 15 to DN 200 (0.5 to 8")
- ✓ Built-In User Interface for On-Site Configuration
- ✓ Low Power and High Resolution

The OMEGA® FPB100 Series flow sensor is the next generation in fluid measurement technology. This new sensor is an improvement on what is already an industry standard. It has the added functionality of various output options including flow switch, multi-functional pulse divider or 4 to 20 mA. Additionally, it offers low flow, low power and high resolution and can be configured onsite directly through the built-in user interface. Installation is simple because the OMEGA FPB100 Series utilizes the same fittings as the popular OMEGA FP5000 and FP8500 Series paddlewheel sensors and fits into pipe sizes ranging from DN15 to DN200 (0.5 to 8"). Available in polypropylene and PVDF, it is ideal for a variety of applications including chemical processing, water and wastewater monitoring and scrubber control.

## SPECIFICATIONS

### General

**Input Frequency Range:** 1 to 1000 Hz  
**Operating Range:** 0.1 m/s to 6 m/s (0.3 ft/s to 20 ft/s)  
**Linearity:** ±1% of max range at 25°C (77°F)  
**Repeatability:** ±0.5% of max range at 25°C (77°F)  
**System Response:** 100 ms update rate nominal

### Wetted Materials

**Sensor Body:** Polypropylene or PVDF (depending on model)

**O-Ring:** FPM

**Rotor Pin:**

**Titanium:** Polypropylene models

**PVDF:** PVDF models

**Rotor:**

**Black PVDF:** Polypropylene models

**Natural PVDF:** PVDF models

### Electrical

#### Pulse, Flow Switch

**With Dry-Contact Relay:** 24 Vdc nominal (21.6 Vdc min to 26.4 Vdc max) 30 mA max current

**With Solid-State Relay:** 5 to 24 Vdc nominal (5.0 Vdc min to 26.4 Vdc max) 30 mA max current

**4 to 20 mA:** 12 Vdc to 32 Vdc nominal (10.8 Vdc min to 35.2 Vdc max) 21 mA max current

#### Reverse Polarity and Short

**Circuit Protection:** Up to 40V, 1 hour

**Over-Voltage Protection:**

>40 Vdc over 1 hour

#### Output Specifications

**Signal Averaging:** Programmable 0 to 100 seconds

**Sensitivity Response:** Programmable 0 to 9 scale

#### Pulse Divider/Total Pulse Output

**Pulse Divider Setting:**

1.0000 to 99999

**Maximum Pulse Rate:** 300 Hz

**Maximum Pulse Width:** 50 ms

#### Flow Switch Output

**Relay Modes:** Low, high

**Time Delay:** 0.0 to 6400.0 seconds

**Hysteresis:** Adjustable in engineering units

#### Relay Specifications

**Mechanical SPDT:** 5 A at 30 Vdc, 5 A @ 250 Vac

**Solid-State Relay:** 100 mA at 40 Vdc, 70 mA @ 33 Vac



FPB111, \$441, shown smaller than actual size.

### Current Output

**(Passive 4 to 20 mA)**

**Loop Accuracy:** ±32 µA (at 25°C at 24 Vdc)

**Loop Resolution:** 5 µA

**Temp. Drift:** ±1 µA per °C max

**Power Supply Rejection:** ±1 µA per V

**Max Cable:** 300 m (1000')

**Maximum Loop Resistance:**

600 Ω @ 24 Vdc 1K Ω @ 32 Vdc

**Max Temperature/**

**Pressure Rating**

**Storage Temperature:** -10 to 75°C (14 to 167°F)

**Operating Temperature:** 0 to 65°C (32 to 149°F)

**Relative Humidity:** 0 to 90% RH, non-condensing

### Flow Sensor

**PP:** 12.5 bar @ 20°C, 1.7 bar @ 85°C (180 psi @ 68°F, 25 psi @ 185°F)

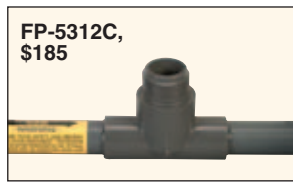
**PVDF:** 14 bar @ 20°C, 1.7 bar @ 85°C (200 psi @ 68°F, 25 psi @ 185°F)

**Operating Temperature:**

**PP:** -18 to 85°C (0 to 185°F)

**PVDF:** -18 to 85°C (0 to 185°F)

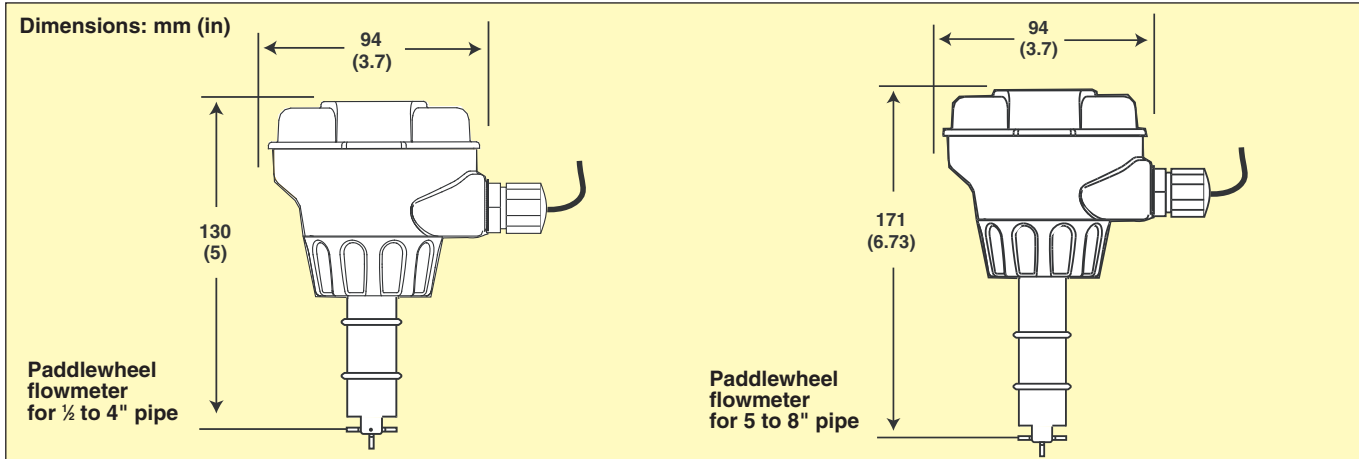
**Standards and Approvals:** NEMA 4X (IP65) enclosure; CE approval



All models shown smaller than actual size



See page F-35 to F-36 for complete list of installation fittings.



**MOST POPULAR MODELS HIGHLIGHTED!**

To Order (Specify Model Number)				
Model No.	Price	Material	Pipe Size, mm (in)	Range
FPB111	\$441	Polypropylene	12.7 to 102 (1/2 to 4)	pulse divider, SPDT relay
FPB112	462	Polypropylene	127 to 203 (5 to 8)	pulse divider, SPDT relay
FPB113	525	PVDF	12.7 to 102 (1/2 to 4)	pulse divider, SPDT relay
FPB121	441	Polypropylene	12.7 to 102 (1/2 to 4)	pulse divider, SSR
FPB122	462	Polypropylene	127 to 203 (5 to 8)	pulse divider, SSR
FPB123	525	PVDF	12.7 to 102 (1/2 to 4)	pulse divider, SSR
FPB131	452	Polypropylene	12.7 to 102 (1/2 to 4)	switch, SPDT relay
FPB132	462	Polypropylene	127 to 203 (5 to 8)	switch, SPDT relay
FPB133	525	PVDF	12.7 to 102 (1/2 to 4)	switch, SPDT relay
FPB141	452	Polypropylene	12.7 to 102 (1/2 to 4)	switch, SSR
FPB142	462	Polypropylene	127 to 203 (5 to 8)	switch, SSR
FPB143	525	PVDF	12.7 to 102 (1/2 to 4)	switch, SSR
FPB151	483	Polypropylene	12.7 to 102 (1/2 to 4)	4 to 20 mA
FPB152	503	Polypropylene	127 to 203 (5 to 8)	4 to 20 mA
FPB153	578	PVDF	12.7 to 102 (1/2 to 4)	4 to 20 mA

### Accessories

Model No.	Price	Description
FP-5310	\$165	1" PVC SCH 40 installation fitting; see pages F-35 to F-36 for additional fittings available
PSU-93	40	24 Vdc power supply
TX4-100	35	4-conductor shielded cable, 30 m (100')

Comes complete with operator's manual. Installation fittings sold separately.

**Ordering Examples:** FPB111, flow sensor with pulse divider output, with FP-5310, 1" PVC installation fitting, PSU-93, 24 Vdc power supply, and TX4-100, multi-conductor hook-up wire, \$441 + 165 + 40 + 35 = \$681.

FPB131, sensor with switch, SPDT, mechanical relay, FP-5320GI galvanized iron fitting, PSU-93 power supply, \$452 + 113 + 40 = \$605.

Recommended Reference Book: Maintenance—Engineering Fluid Mechanics, FW-0112, \$103. See Section Y for Additional Books.



#### UNITED STATES

[www.omega.com](http://www.omega.com)  
1-800-TC-OMEGA  
Stamford, CT.

#### CANADA

[www.omega.ca](http://www.omega.ca)  
Laval(Quebec)  
1-800-TC-OMEGA

#### GERMANY

[www.omega.de](http://www.omega.de)  
Deckenpfronn, Germany  
0800-8266342

#### UNITED KINGDOM

[www.omega.co.uk](http://www.omega.co.uk)  
Manchester, England  
0800-488-488

#### FRANCE

[www.omega.fr](http://www.omega.fr)  
Guyancourt, France  
088-466-342

#### CZECH REPUBLIC

[www.omegaeng.cz](http://www.omegaeng.cz)  
Karviná, Czech Republic  
596-311-899

#### BENELUX

[www.omega.nl](http://www.omega.nl)  
Amstelveen, NL  
0800-099-33-44



## More than 100,000 Products Available!

### • Temperature

Calibrators, Connectors, General Test and Measurement Instruments, Glass Bulb Thermometers, Handheld Instruments for Temperature Measurement, Ice Point References, Indicating Labels, Crayons, Cements and Lacquers, Infrared Temperature Measurement Instruments, Recorders Relative Humidity Measurement Instruments, RTD Probes, Elements and Assemblies, Temperature & Process Meters, Timers and Counters, Temperature and Process Controllers and Power Switching Devices, Thermistor Elements, Probes and Assemblies, Thermocouples Thermowells and Head and Well Assemblies, Transmitters, Wire

### • Flow and Level

Air Velocity Indicators, Doppler Flowmeters, Level Measurement, Magnetic Flowmeters, Mass Flowmeters, Pitot Tubes, Pumps, Rotameters, Turbine and Paddle Wheel Flowmeters, Ultrasonic Flowmeters, Valves, Variable Area Flowmeters, Vortex Shedding Flowmeters

### • pH and Conductivity

Conductivity Instrumentation, Dissolved Oxygen Instrumentation, Environmental Instrumentation, pH Electrodes and Instruments, Water and Soil Analysis Instrumentation

### • Data Acquisition

Auto-Dialers and Alarm Monitoring Systems, Communication Products and Converters, Data Acquisition and Analysis Software, Data Loggers Plug-in Cards, Signal Conditioners, USB, RS232, RS485 and Parallel Port Data Acquisition Systems, Wireless Transmitters and Receivers

### • Pressure, Strain and Force

Displacement Transducers, Dynamic Measurement Force Sensors, Instrumentation for Pressure and Strain Measurements, Load Cells, Pressure Gauges, Pressure Reference Section, Pressure Switches, Pressure Transducers, Proximity Transducers, Regulators, Strain Gages, Torque Transducers, Valves

### • Heaters

Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters