

### FEATURES

- Wide flow range
- One moving part
- Hot tap available
- Modular electronics compatible
- Easily depth adjustable for 3-40" pipe

### APPLICATIONS

- Clean water
- Large pipes
- Aquariums, water parks
- Water & wastewater monitoring

### GENERAL INFORMATION

The **IP100/200-Series** are adjustable depth insertion paddlewheels that come in brass, PVC or 316 stainless models to fit 3" to 40" pipe. Adapters mate with standard 1-1/2" (110/210) or 2" (150/250 or PVC110/210) NPT threaded fittings such as saddles and weldolets which may be purchased either locally or from Seametrics.

Ruby bearings and a non-drag Hall-effect sensor give these meters the widest flow range of any of the paddlewheel types. A sensor detects the passage of miniature magnets in the six rotor blades. The resulting square-wave signal can be sent for hundreds of feet over unshielded cable without a transmitter and connected directly to many PLC's and other controls without any additional electronics.

If desired, a modular system of electronics can be installed directly on the flow sensor or mounted remotely. The FT415 (battery powered) or FT420 (loop powered) flow indicator provides digital rate and total display, as well as programmable pulse output; the FT420 also provides a 4-20 mA analog output. If a display is not required, the A055 provides 4-20 mA analog output, and the PD10 provides a programmable pulse for pump pacing.

The "hot-tap" models (IP150/250) can be installed or serviced without shutting down the line by means of a 2" full-port isolation valve that comes with a nipple for installation on the pipe fitting. In most circumstances, no special tool is required.



# IP100/200-SERIES Insertion Paddlewheel Flow Sensor

## FEATURES

- Modular electronics (optional)
- rate/total/pulse/4-20 mA
  - blind 4-20 transmitter
  - pulse divider

18 Foot Cable

Rugged cast aluminum housing

Compression nut  
for easy adjustment, secure locking

Adapter mates with  
1-1/2" FNPT threaded fitting

Rotor housing

Removable jewel bearings  
Rotor

IP110/210

3/4" diameter tubing  
for low insertion force

2" Adapter  
removes to mount  
hot-tap machine

Full-port 2" ball valve  
for sensor removal  
(2" gate valve for PVC)

Adapter mates  
with 2" FNPT  
threaded fitting

Locking collar

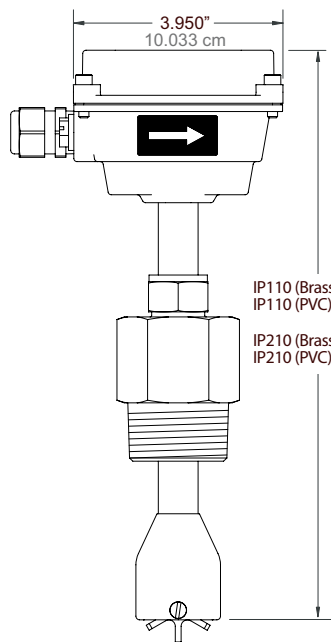
IP150/250

## SPECIFICATIONS\*

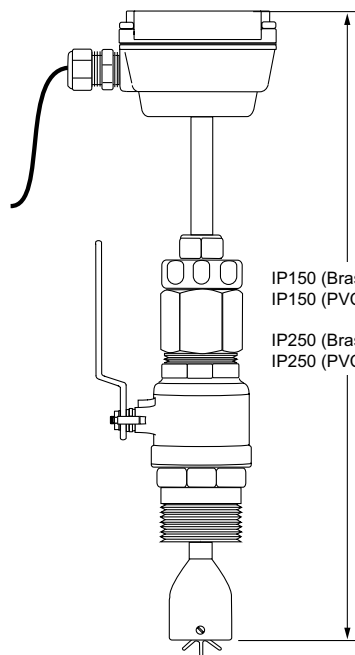
Pipe Size		IP110/150	IP210/250	
		3" to 12" (50 - 300mm)	12" to 40" (300 - 1000mm)	
Sensor		Hall Effect sensor, 12 Vdc current sinking pulse		
Materials	Housing	Cast aluminum		
	Sensor Body	Brass, PVC or 316 SS		
	Rotor	PVDF (Kynar)		
	Shaft	Nickel-bound tungsten carbide (zirconia ceramic optional)		
	Bearings	Ruby jewel		
	Isolation Ball Valve	IP110/210 (Brass/SS)	IP150/250 (Brass/SS)	PVC 110/210/150/250
None		Bronze (316SS optional)	(PVC uses gate valve)	
Fitting Size Required		1.5" FNPT	2" FNPT	2" FNPT
Flow Range		0.3 - 30 feet/sec (0.1 - 9 meter/sec)		
Accuracy		+/- 1.5% of full scale		
Maximum Temperature				
		Brass/SS	200 ° F (93 ° C)	
		PVC	130 ° F (55 ° C)	
Maximum Pressure				
		Brass/SS	200 psi (14 bar)	
		PVC	150 psi (10 bar)	
Insertion Force		0.44 x pressure in pipe		
Power		5-24 Vdc, 1.5 mA (3.5 - 16 Vdc with -04 option)		
Cable		#22 AWG 3-con, 18' (6m); 2,000' (650m) maximum cable run		

\*Specifications subject to change. Please consult our website for the most current data ([www.seametrics.com](http://www.seametrics.com)).

### DIMENSIONS



IP110 (Brass/SS) = 10.88" (27.64 cm)  
 IP110 (PVC) = 11.88" (30.18 cm)  
 IP210 (Brass/SS) = 15.88" (40.34 cm)  
 IP210 (PVC) = 16.88" (42.88 cm)

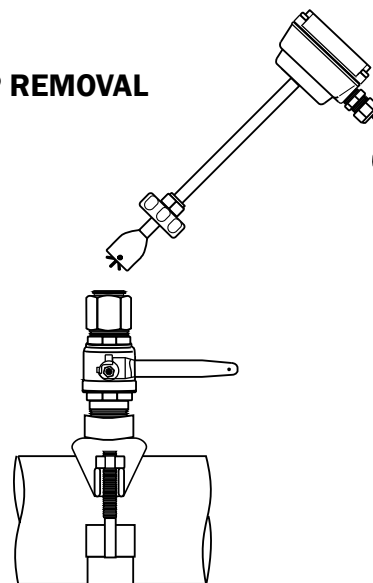


IP150 (Brass/SS) = 17.75" (45.09 cm)  
 IP150 (PVC) = 18.75" (47.63 cm)  
 IP250 (Brass/SS) = 21.75" (55.25 cm)  
 IP250 (PVC) = 21.75" (57.79 cm)

### HOT TAP INSTALLATION

Insertion and removal under pressure is possible due to the 2" full-port isolation valve, which comes with a nipple for installation on the pipe fitting. If it is necessary to do the initial installation under pressure, any standard hot tap drilling machine with 2" NPT adapter, such as a Transmate or a Mueller, can be used. Ordinarily, it is not necessary to use an installation tool, since the small-diameter tube can be controlled by hand at all but the highest pressures.

### HOT TAP REMOVAL



### FLOW RANGE

	3"	4"	6"	8"	10"	12"	16"	18"	24"	30"	36"	40"
<b>GPM Min (.3ft/sec)</b>	6.6	12	27	47	73	106	188	238	422	660	951	1,174
<b>LPM Min (.09m/sec)</b>	24.98	45.42	102.21	177.91	276.34	401.25	711.66	900.93	1597.44	2498.37	3599.93	4444.07
<b>GPM Max (30ft/sec)</b>	660	1200	2700	4700	7370	10600	18800	23800	42200	66000	95100	117400
<b>LPM Max (9.1m/sec)</b>	2498.37	4542.49	10220.61	17791.44	27898.48	40125.36	71165.74	90092.80	159744.40	249837.20	359992.70	444407.30



# IP100/200-SERIES Insertion Paddlewheel Flow Sensor

## HOW TO ORDER

Sensor Only					
Description	Size	Material	Standard Options		Hot Tap Options
Sensor Only.	3" - 12" = <b>IP110</b> 12" - 40" = <b>IP210</b>  Hot Tap 3" - 12" = <b>IP150</b> 12" - 40" = <b>IP250</b>	Brass = <b>B</b> 316 SS = <b>S</b> PVC = <b>P</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Brass Adapter Fitting 2" NPT = <b>-02</b> SS Adapter Fitting 2" NPT = <b>-02</b> Micropower Pickup = <b>-04</b> Standard Power, LMI 4-pin Connector = <b>-06</b> Std Power, Seametrics Ctrl Connector = <b>-07</b>	Brass Adapter 1 1/2" BSP = <b>-23</b> SS Adapter 1 1/2" BSP = <b>-24</b> Old Style Adapter 1 1/2" NPT = <b>-35</b> Immersible = <b>-40</b> 12" Extension (210/350 Series Only) = <b>-72</b> Roytronics Series-A 5-Pin Connector = <b>-106</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Micropower Pickup = <b>-04</b> Standard Power, LMI 4-pin Connector = <b>-06</b> Standard Power, Seametrics Control Connector = <b>-07</b> 316 SS Valve Assembly = <b>-08</b> Immersible = <b>-40</b> 12" Extension (210/350 Series Only) = <b>-72</b> Roytronics Series-A 5-Pin Connector = <b>-106</b>
FT420 Mounted on Sensor					
Description	Size	Material	Standard Options		Hot Tap Options
Rate & total indicator with pulse & 4-20 mA output, externally powered (FT420) mounted on the sensor.	3" - 12" = <b>IP111</b> 12" - 40" = <b>IP211</b>  Hot Tap 3" - 12" = <b>IP151</b> 12" - 40" = <b>IP251</b>	Brass = <b>B</b> 316 SS = <b>S</b> PVC = <b>P</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Brass Adapter Fitting 2" NPT = <b>-02</b> SS Adapter Fitting 2" NPT = <b>-02</b> Brass Adapter 1 1/2" BSP = <b>-23</b> SS Adapter 1 1/2" BSP = <b>-24</b> Tampere Evident Kit = <b>-32</b> Old Style Adapter 1 1/2" NPT = <b>-35</b>	Immersible = <b>-40</b> Non-resettable Total = <b>-64</b> 12" Extension (210/350 Series Only) = <b>-72</b> Dual Relay Output = <b>-98</b> Hinged Display Cover = <b>-126</b> † Gallons = <b>-G</b> † Gallons x 1000 = <b>GT</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> 316 SS Valve Assembly = <b>-08</b> Immersible = <b>-40</b> Non-resettable Total = <b>-64</b> 12" Extension (210/350 Series Only) = <b>-72</b> Dual Relay Output = <b>-98</b> Hinged Display Cover = <b>-126</b> † Gallons = <b>-G</b> † Gallons x 1000 = <b>GT</b>
A055 Mounted on Sensor					
Description	Size	Material	Standard Options		Hot Tap Options
Blind 4-20 mA analog transmitter (A055) mounted on the sensor.	3" - 12" = <b>IP112</b> 12" - 40" = <b>IP212</b>  Hot Tap 3" - 12" = <b>IP152</b> 12" - 40" = <b>IP252</b>	Brass = <b>B</b> 316 SS = <b>S</b> PVC = <b>P</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Brass Adapter Fitting 2" NPT = <b>-02</b> SS Adapter Fitting 2" NPT = <b>-02</b> Standard Power, LMI 4-pin Connector = <b>-06</b> Brass Adapter 1 1/2" BSP = <b>-23</b>	SS Adapter 1 1/2" BSP = <b>-24</b> Old Style Adapter 1 1/2" NPT = <b>-35</b> Immersible = <b>-40</b> 12" Extension (210/350 Series Only) = <b>-72</b> Roytronics Series-A 5-Pin Connector = <b>-106</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Standard Power, LMI 4-pin Connector = <b>-06</b> 316 SS Valve Assembly = <b>-08</b> Immersible = <b>-40</b> 12" Extension (210/350 Series Only) = <b>-72</b> Roytronics Series-A 5-Pin Connector = <b>-106</b>
FT415 Mounted on Sensor					
Description	Size	Material	Options		Hot Tap Options
Rate & total indicator with pulse & 4-20 mA output, battery powered (FT415) mounted on the sensor.	3" - 12" = <b>IP114</b> 12" - 40" = <b>IP214</b>  Hot Tap 3" - 12" = <b>IP154</b> 12" - 40" = <b>IP254</b>	Brass = <b>B</b> 316 SS = <b>S</b> PVC = <b>P</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Brass Adapter Fitting 2" NPT = <b>-02</b> SS Adapter Fitting 2" NPT = <b>-02</b> Brass Adapter 1 1/2" BSP = <b>-23</b> SS Adapter 1 1/2" BSP = <b>-24</b> Tampere Evident Kit = <b>-32</b>	Old Style Adapter 1 1/2" NPT = <b>-35</b> Immersible = <b>-40</b> Non-Resettable Total = <b>-64</b> 12" Extension (210/350 Series Only) = <b>-72</b> Hinged Display Cover = <b>-126</b> † Gallons = <b>-G</b> † Gallons x 1000 = <b>GT</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> 316 SS Valve Assembly = <b>-08</b> Tampere Evident Kit = <b>-32</b> Immersible = <b>-40</b> Non-resettable Total = <b>-64</b> 12" Extension (210/350 Series Only) = <b>-72</b> Hinged Display Cover = <b>-126</b> † Gallons = <b>-G</b> † Gallons x 1000 = <b>GT</b>
DL76 Mounted on Sensor					
Description	Size	Material	Options		Hot Tap Options
Data logger (DL76) mounted on the sensor.	3" - 12" = <b>IP116</b> 12" - 40" = <b>IP216</b>  Hot Tap 3" - 12" = <b>IP116</b> 12" - 40" = <b>IP216</b>	Brass = <b>B</b> 316 SS = <b>S</b> PVC = <b>P</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Brass Adapter Fitting 2" NPT = <b>-02</b> SS Adapter Fitting 2" NPT = <b>-02</b> Brass Adapter 1 1/2" BSP = <b>-23</b>	SS Adapter 1 1/2" BSP = <b>-24</b> Tampere Evident Kit = <b>-32</b> Old Style Adapter 1 1/2" NPT = <b>-35</b> Immersible = <b>-40</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> 316 SS Valve Assembly = <b>-08</b> Tampere Evident Kit = <b>-32</b> Immersible = <b>-40</b> 12" Extension (210/350 Series Only) = <b>-72</b>
PD10 Mounted on Sensor					
Description	Size	Material	Options		Hot Tap Options
Pulse Divider (PD10) mounted on the sensor.	3" - 12" = <b>IP118</b> 12" - 40" = <b>IP218</b>  Hot Tap 3" - 12" = <b>IP158</b> 12" - 40" = <b>IP258</b>	Brass = <b>B</b> 316 SS = <b>S</b> PVC = <b>P</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> Brass Adapter Fitting 2" NPT = <b>-02</b> SS Adapter Fitting 2" NPT = <b>-02</b> LMI Pump 4-pin Connector = <b>-06</b> Brass Adapter 1 1/2" BSP = <b>-23</b>	SS Adapter 1 1/2" BSP = <b>-24</b> Old Style Adapter 1 1/2" NPT = <b>-35</b> 10 Ft. Cable for LMI Connector = <b>-37</b> Immersible = <b>-40</b> Roytronics Series-A 5-Pin Connector = <b>-106</b>	Rotor with Ceramic Shaft, PVDF, Kynar = <b>-01</b> LMI Pump 4-pin Connector = <b>-06</b> 316 SS Valve Assembly = <b>-08</b> Immersible = <b>-40</b> 12" Extension (210/350 Series Only) = <b>-72</b> Roytronics Series-A 5-Pin Connector = <b>-106</b>

\*Consult factory for suitable applications \*\*Requires appropriate fitting. † Total Units must be specified at time of order

## CONTACT YOUR SUPPLIER

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