

# IP100/200-SERIES

## INSERTION PADDLEWHEEL FLOW SENSOR



**IP11x/21x**  
(Shown with optional  
externally powered  
electronics)



**IP15x/25x**  
(Shown with optional  
battery powered  
electronics)

### APPLICATIONS

Clean water

Large pipes

Aquariums, water parks

Water & wastewater  
monitoring

### Features

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

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" (11x/21x) or 2" (15x/25x), or PVC (11x/21x) 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.

A modular system of electronics can be installed directly on the flow sensor or mounted remotely. The FT430 (externally powered with pulse), FT440 (loop powered), and FT450 (battery powered) all provide digital rate and total displays, as well as a programmable pulse; the FT440 also provides a 4-20 mA analog output. The AO55 is a blind analog (4-20 mA) transmitter. Programmable pulse for pump pacing is available with the PD10 (available as wall-mounted unit only).

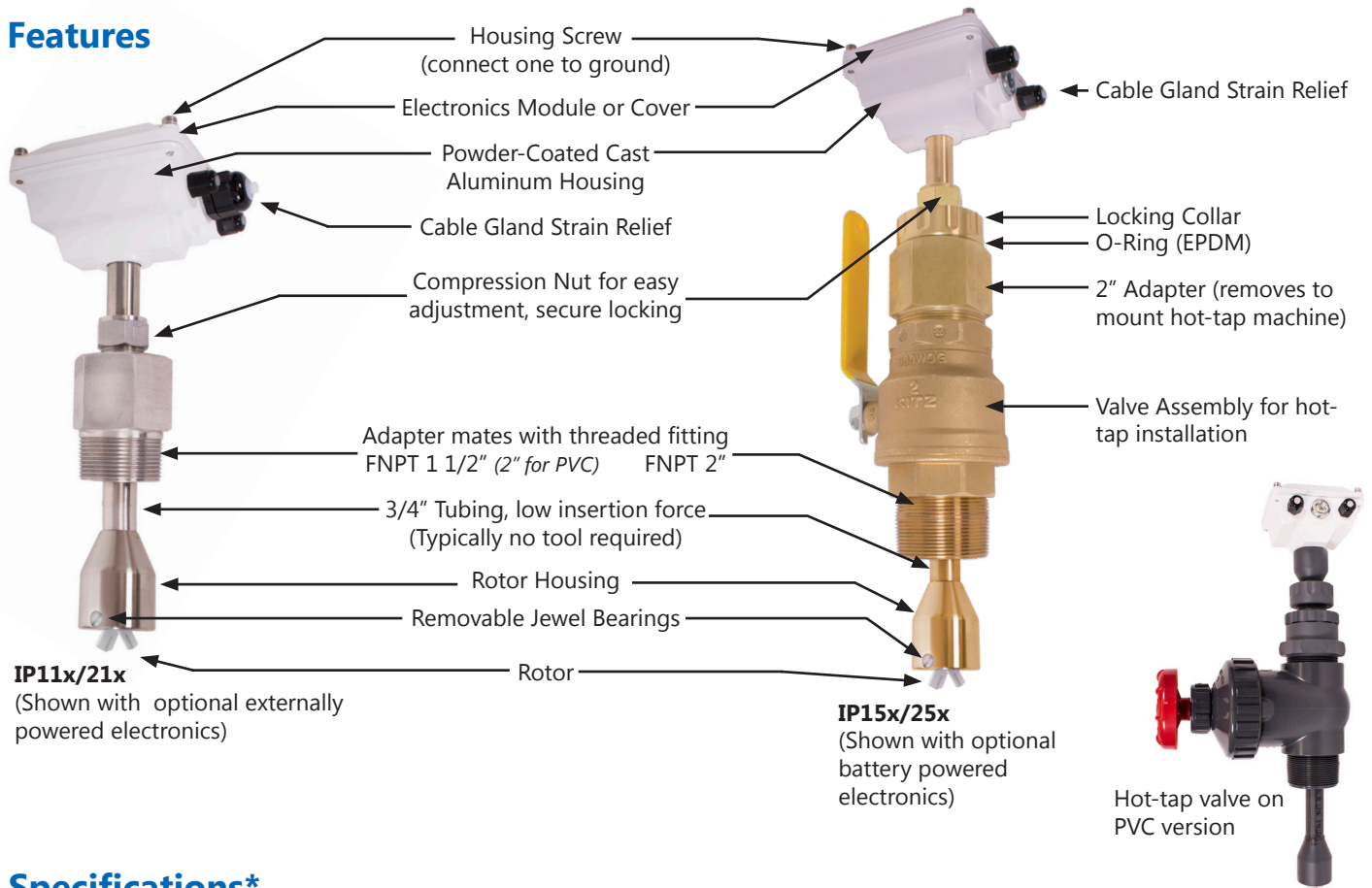
The "hot-tap" models (IP15x/25x) can be installed or serviced without shutting down the line by means of a 2" full-port isolation valve that comes with a nipple for installation on the pipe fitting. In most circumstances, no special tool is required.

### Contact Your Supplier

**IP100/200-SERIES  
INSERTION PADDLEWHEEL  
FLOW SENSOR**



**Features**

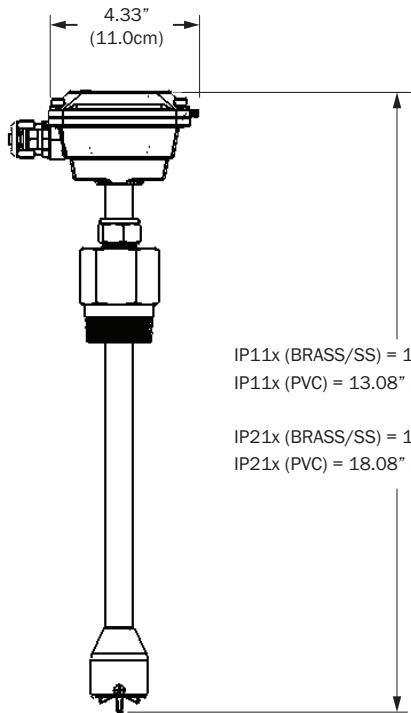


**Specifications\***

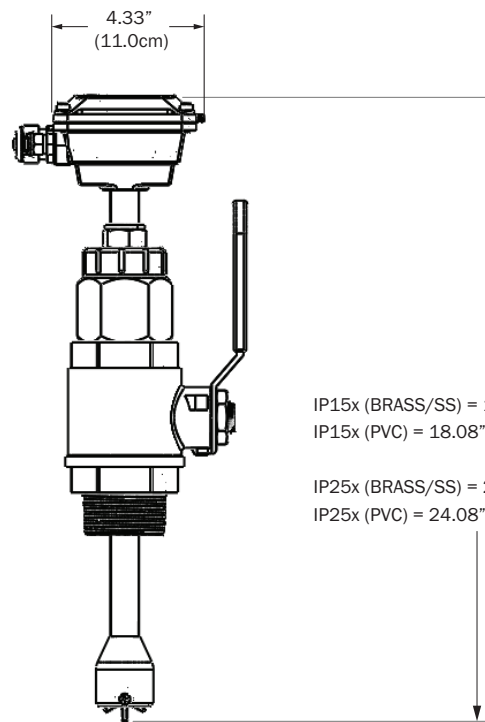
<b>Pipe Size</b>	3" to 40"			
<b>Power</b>	<b>Low Power:</b> 6-36 Vdc / < 2 mA		<b>Micropowered (-04 Option):</b> 3.1-16 Vdc / 60 µA @ 3.6 Vdc	
<b>Sensor</b>	<b>Low Power:</b> Digital Magnetoresistive		<b>Micropowered (-04 Option):</b> Giant Magnetoresistance (GMR)	
<b>Materials</b>	<b>Housing</b>	Powder-coated cast aluminum		
	<b>Tubing/Fitting/Sensor Housing</b>	Brass, PVC, or 316 Stainless Steel		
	<b>Rotor</b>	PVDF (Kynar®)		
	<b>Shaft</b>	Kynar® / Tungsten Carbide (Kynar® / Ceramic or Kynar® / Silicon Carbide optional)		
	<b>Bearings</b>	Ruby jewel		
	<b>O-Ring (15x/25x only)</b>	EDPM		
	<b>Valve Assembly for:</b>	<b>IP11x/21x (Brass/SS)</b>	<b>IP11x/21x (PVC)</b>	<b>IP15x/25x (Brass/SS)</b>
	None	None	Bronze (316SS optional)	Uses gate valve
<b>Fitting Size Required</b>	1.5" FNPT	2" FNPT	2" FNPT	2" FNPT
<b>Maximum</b>	<b>Pressure</b>	<b>Brass/SS:</b> 200 psi (14 bar)	<b>PVC:</b> 150 psi (10 bar)	
	<b>Temperature</b>	<b>Brass/SS:</b> 200° F (93° C)	<b>PVC:</b> 130° F (55° C)	
<b>Flow Velocity</b>	0.3 to 30 ft/sec (0.9 to 9.14 m/sec)			
<b>Accuracy</b>	± 1.5% of full scale			
<b>Output Transistor Maximum Current Sinking</b>	150mA (low power version only)			
<b>Cable</b>	#22 AWG 3-con, 18' (6m); 2,000' (610m) maximum cable run Note: 50' (15m) maximum for battery powered or micropowered versions.			
<b>Environmental</b>	See meter mounted electronic specification for rating.			
<b>Regulatory</b>	C E Mark			

\*Specifications subject to change. Please consult our website for the most current data ([www.seametrics.com](http://www.seametrics.com)).  
Kynar is a registered trademark of Arkema, Inc.

## Dimensions



IP11x (BRASS/SS) = 11.08" (28.1cm)  
 IP11x (PVC) = 13.08" (33.2cm)  
 IP21x (BRASS/SS) = 16.08" (40.8cm)  
 IP21x (PVC) = 18.08" (45.9cm)

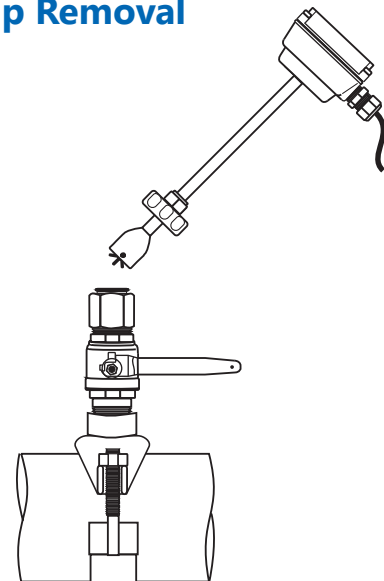


IP15x (BRASS/SS) = 18.08" (45.9cm)  
 IP15x (PVC) = 18.08" (45.9cm)  
 IP25x (BRASS/SS) = 22.08" (56.1cm)  
 IP25x (PVC) = 24.08" (61.2cm)

## 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	45.4	102	178	276	401	712	901	1597	2498	3600	4444
<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	4542	10220	17791	27898	40125	71166	90093	159744	249837	359993	444407

Approximations based on Schedule 40 pipe.

## How to Order

	Description	Size	Material	Options (110/210)		Options (150/250)
<b>Sensor Only</b>	Sensor Only.	3" - 12" = IP110 12" - 40" = IP210	Brass = B 316 SS = S PVC = P	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Brass Adapter Fitting 2" NPT = -02 SS Adapter Fitting 2" NPT = -02 Micropower Pickup = -04 Standard Power, LMI 4-pin Connector = -06 Strnd Power, Seametrics Ctrl Connector = -07	Brass Adapter 1 1/2" BSP = -23 SS Adapter 1 1/2" BSP = -24 Old Style Adapter 1 1/2" NPT = -35 *Immersible = -40 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Roytronic® Series-A 5-Pin Connector = -106	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Micropower Pickup = -04 Standard Power, LMI 4-pin Connector = -06 Standard Power, Seametrics Control Connector = -07 316 SS Valve Assembly = -08 No Valve Assembly = -09 *Immersible = -40 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Roytronic® Series-A 5-Pin Connector = -106
	Hot Tap 3" - 12" = IP150 12" - 40" = IP250					
<b>A055 Mounted on Sensor</b>	Blind 4-20 mA analog transmitter (A055) mounted on the sensor.	3" - 12" = IP112 12" - 40" = IP212	Brass = B 316 SS = S PVC = P	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Brass Adapter Fitting 2" NPT = -02 SS Adapter Fitting 2" NPT = -02 Standard Power, LMI 4-pin Connector = -06 Brass Adapter 1 1/2" BSP = -23	SS Adapter 1 1/2" BSP = -24 Old Style Adapter 1 1/2" NPT = -35 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Roytronic® Series-A 5-Pin Connector = -106	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Standard Power, LMI 4-pin Connector = -06 316 SS Valve Assembly = -08 No Valve Assembly = -09 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Roytronic® Series-A 5-Pin Connector = -106
	Hot Tap 3" - 12" = IP152 12" - 40" = IP252					
<b>FT430 Mounted on Sensor</b>	Rate & total indicator with pulse, externally powered (FT430) mounted on the sensor.	3" - 12" = IP113 12" - 40" = IP213	Brass = B 316 SS = S PVC = P	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Brass Adapter Fitting 2" NPT = -02 SS Adapter Fitting 2" NPT = -02 Brass Adapter 1 1/2" BSP = -23 SS Adapter 1 1/2" BSP = -24 Tamperevident Kit = -32 Old Style Adapter 1 1/2" NPT = -35	Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Hinged Display Cover = -126	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 316 SS Valve Assembly = -08 No Valve Assembly = -09 Tamperevident Kit = -32 Old Style Adapter = -35 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Hinged Display Cover = -126
	Hot Tap 3" - 12" = IP153 12" - 40" = IP253					
<b>DL76 Mounted on Sensor</b>	Data logger (DL76) mounted on the sensor.	3" - 12" = IP116 12" - 40" = IP216	Brass = B 316 SS = S PVC = P	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Brass Adapter Fitting 2" NPT = -02 SS Adapter Fitting 2" NPT = -02 Brass Adapter 1 1/2" BSP = -23 SS Adapter 1 1/2" BSP = -24	Tamperevident Kit = -32 Old Style Adapter 1 1/2" NPT = -35 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 316 SS Valve Assembly = -08 No Valve Assembly = -09 Tamperevident Kit = -32 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72
	Hot Tap 3" - 12" = IP156 12" - 40" = IP256					
<b>FT450 Mounted on Sensor</b>	Rate & total indicator with pulse, battery powered (FT450) mounted on the sensor.	3" - 12" = IP117 12" - 40" = IP217	Brass = B 316 SS = S PVC = P	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Brass Adapter Fitting 2" NPT = -02 SS Adapter Fitting 2" NPT = -02 Brass Adapter 1 1/2" BSP = -23 SS Adapter 1 1/2" BSP = -24 Tamperevident Kit = -32 Old Style Adapter 1 1/2" NPT = -35	Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Hinged Display Cover = -126	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 316 SS Valve Assembly = -08 No Valve Assembly = -09 Tamperevident Kit = -32 Old Style Adapter = -35 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Hinged Display Cover = -126
	Hot Tap 3" - 12" = IP157 12" - 40" = IP257					
<b>FT440 Mounted on Sensor</b>	Rate & total indicator with pulse & 4-20 mA output, loop powered (FT440) mounted on the sensor.	3" - 12" = IP119 12" - 40" = IP219	Brass = B 316 SS = S PVC = P	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 Brass Adapter Fitting 2" NPT = -02 SS Adapter Fitting 2" NPT = -02 Brass Adapter 1 1/2" BSP = -23 SS Adapter 1 1/2" BSP = -24 Tamperevident Kit = -32 Old Style Adapter 1 1/2" NPT = -35	Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Hinged Display Cover = -126	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 316 SS Valve Assembly = -08 No Valve Assembly = -09 Tamperevident Kit = -32 Old Style Adapter = -35 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Hinged Display Cover = -126
	Hot Tap 3" - 12" = IP159 12" - 40" = IP259					

\* Immersible to maximum of 3 ft (1m), up to 2 weeks • Kynar is a registered trademark of Arkema, Inc. Roytronic is a registered trademark of Milton Roy Company.