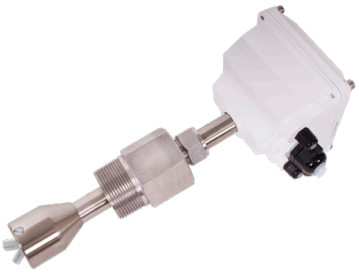
IP100/200-SERIES
INSERTION PADDLEWHEEL FLOW SENSOR



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
- Low-friction, long-life jewel bearings
- Data logger (optional)
- Sensus smart output (optional with display)

Contact Your Supplier

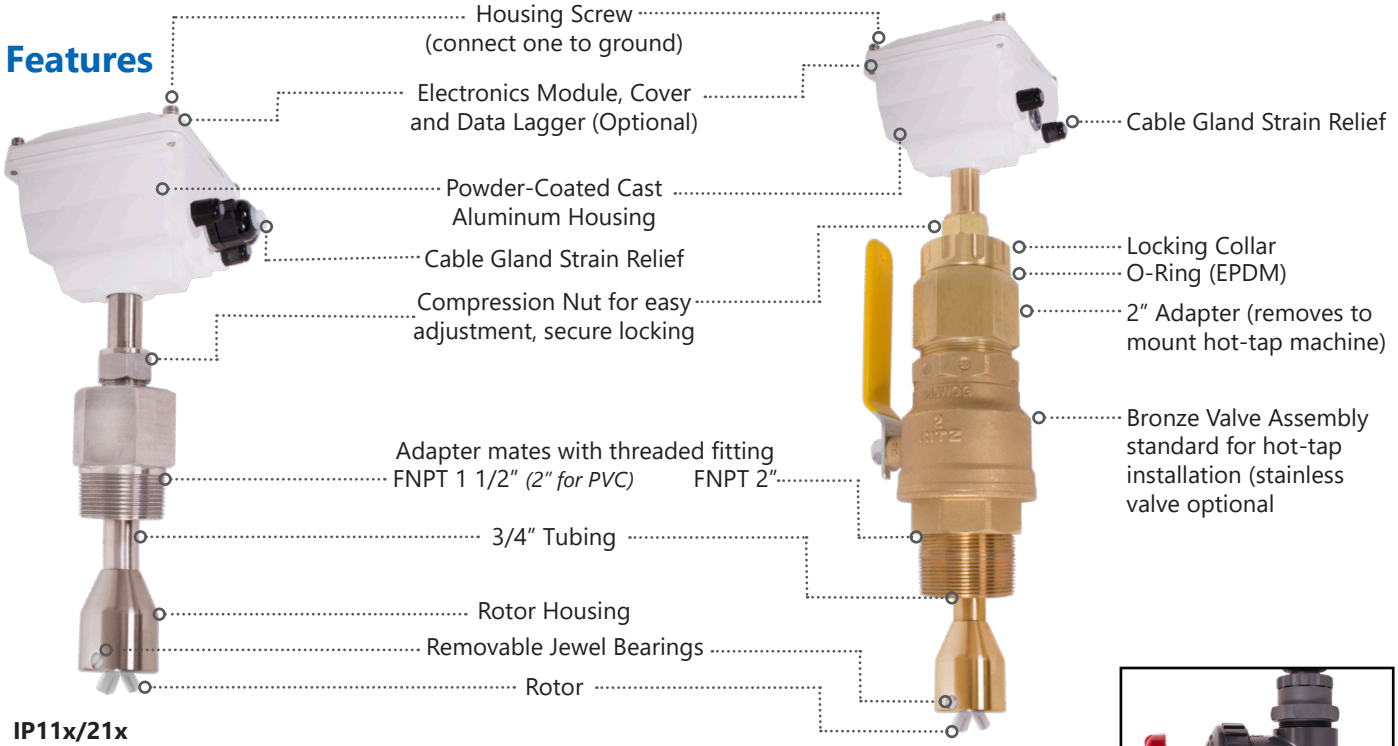
The **IP100/200-Series** are adjustable depth insertion paddlewheels that come in brass, PVC, or 316 stainless models to fit 3" to 40" pipe. Adapters mate with standard 1-1/2" (11x/21x) or 2" (15x/25x), or PVC (11x/21x) NPT threaded fittings such as saddles and weldolets which may be purchased either locally or from Seametrics. High-quality jewel bearings and nickel-bound tungsten carbide shafts are used for extreme low friction and long life.

Ruby bearings and a non-drag Hall-effect sensor give these meters the widest flow range of any paddlewheel on the market. 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 FT445 (battery powered) all provide digital rate and total displays, as well as a programmable pulse; the FT440 provides a 4-20 mA analog output. The FT445 provides a 4-20mA analog output when externally powered.

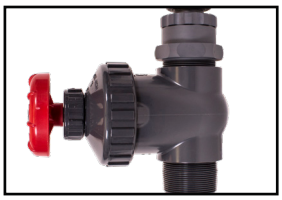
The "hot-tap" models (IP15x/25x) can be installed or serviced without shutting down the line by means of a 2" full-port isolation valve that comes with a nipple for installation on the pipe fitting. In most circumstances, no special tool is required.

Features



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

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



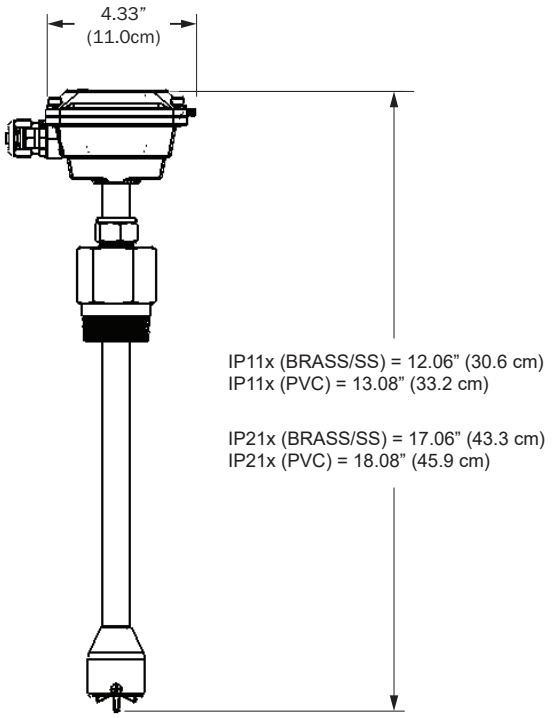
Hot-tap valve on PVC version

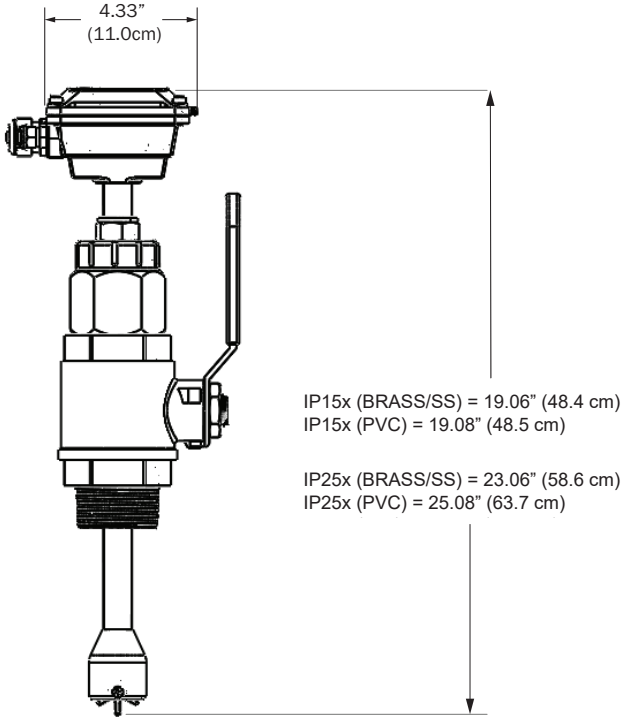
Specifications*

Pipe Size		3" to 40"			
Power		**Low Power:** 6-36 Vdc/< 2 mA	**Micropowered (-04 Option):** 3.1-16 Vdc/60 µA @ 3.6 Vdc		
Sensor		**Low Power:** Digital Magnetoresistive	**Micropowered (-04 Option):** Giant Magnetoresistance (GMR)		
Materials	**Housing**	Powder-coated cast aluminum			
	Tubing/Fitting/Sensor Housing	Brass, PVC, or 316 Stainless Steel			
	Rotor	PVDF (Kynar®)			
	Shaft	Kynar® /Tungsten Carbide (Kynar® /Ceramic or Kynar®/Silicon Carbide optional)			
	Bearings	Ruby jewel			
	O-Ring *(15x/25x only)*	EDPM			
	Valve Assembly for:	**IP11x/21x (Brass/SS)**	**IP11x/21x (PVC)**	**IP15x/25x (Brass/SS)**	**IP15x/25x (PVC)**
		None	None	Bronze (316SS optional)	Uses gate valve
Fitting Size Required		1.5" FNPT	2" FNPT	2" FNPT	2" FNPT
Maximum	**Pressure**	**Brass/SS:** 200 psi (14 bar)	**PVC:** 150 psi (10 bar)		
	Temperature	**Brass/SS:** 200˚ F (93˚ C)	**PVC:** 130˚ F (55˚ C)		
Flow Velocity		0.3 to 30 ft/sec (0.09 to 9.14 m/sec)			
Accuracy		± 1.5% of full scale			
Output Transistor Maximum Current Sinking		150mA (low power version only)			
Cable		#22 AWG 3-con, 18' (6m); 2,000' (610m) maximum cable run Note: 50' (15m) maximum for battery powered or micropowered versions.			
Environmental		See meter mounted electronic specification for rating.			
Regulatory		CE Mark (applies to full power sensor only configuration and full power FT 430/440/450 mounted configurations)			

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

Dimensions

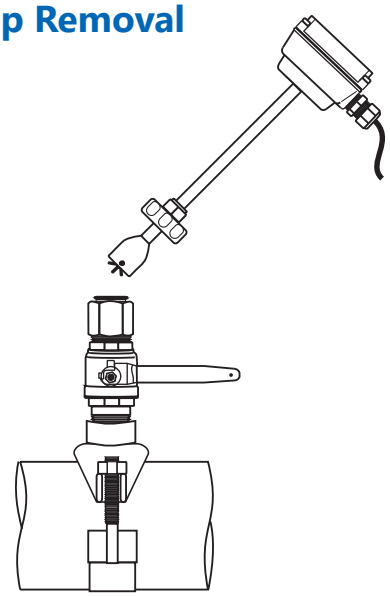




Hot Tap Installation

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"
GPM Min (.3ft/sec)	6.6	12	27	47	73	106	188	238	422	660	951	1,174
LPM Min (.09m/sec)	24	45.4	102	178	276	401	712	901	1597	2498	3600	4444
GPM Max (30ft/sec)	660	1200	2700	4700	7370	10600	18800	23800	42200	66000	95100	117400
LPM Max (9.1m/sec)	2498	4542	10220	17791	27898	40125	71166	90093	159744	249837	359993	444407

Approximations based on Schedule 40 pipe.

How to Order

Sensor Only

Description	Size	Material	Options (110/210)	Options (150/250)
Sensor Only.	3" - 12" = IP110 12" - 40" = IP210 **Hot Tap** 3" - 12" = IP150 12" - 40" = IP250	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 (Required for use with FT450) = -04 Standard Power, LMI 4-pin Connector = -06 Stnd Power, Seametrics Ctrl Connector = -07 Old Style Adaptor 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 (Required for use with FT450) = -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 brass and SS Only) = -72 Roytronic® Series-A 5-Pin Connector = -106

FT430 Mounted on Sensor

Description	Size	Material	Options (113/213)	Options (153/253)
Rate & total indicator with pulse, externally powered (FT430) mounted on the sensor.	3" - 12" = IP113 12" - 40" = IP213 **Hot Tap** 3" - 12" = IP153 12" - 40" = IP253	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 Tamper Evident Kit = -32 Old Style Adaptor 1-1/2" NPT = -35 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Dual Relay Output = -98 Hinged Display Cover = -126 Sensus Smart Output (Includes 6' Cable) = -150	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 316 SS Valve Assembly = -08 No Valve Assembly = -09 Tamper Evident Kit = -32 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series brass and SS Only) = -72 Dual Relay Output = -98 Hinged Display Cover = -126 Internal Data Logger = -127 Sensus Smart Output (Includes 6' Cable) = -150

FT445 Mounted on Sensor **

Description	Size	Material	Options (117/217)	Options (157/257)
Rate & total indicator with pulse, battery powered or loop powered by 4-20 mA loop when powered loop is connected. (FT445) mounted on the sensor.	3" - 12" = IP115 12" - 40" = IP215 **Hot Tap** 3" - 12" = IP155 12" - 40" = IP255	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 Tamper Evident Kit = -32 Old Style Adaptor 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 Sensus Smart Output (Includes 6' Cable) = -150	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 316 SS Valve Assembly = -08 No Valve Assembly = -09 Tamper Evident Kit = -32 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series brass and SS Only) = -72 Hinged Display Cover = -126 Internal Data Logger = -127 Sensus Smart Output (Includes 6' Cable) = -150

FT440 Mounted on Sensor

Description	Size	Material	Options (119/219)	Options (159/259)
Rate & total indicator with pulse & 4-20 mA output, loop powered (FT440) mounted on the sensor.	3" - 12" = IP119 12" - 40" = IP219 **Hot Tap** 3" - 12" = IP159 12" - 40" = IP259	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 Tamper Evident Kit = -32 Old Style Adaptor 1-1/2" NPT = -35 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Dual Relay Output = -98 Hinged Display Cover = -126 Sensus Smart Output (Includes 6' Cable) = -150	Rotor with Ceramic Shaft, PVDF, Kynar® = -01 316 SS Valve Assembly = -08 No Valve Assembly = -09 Tamper Evident Kit = -32 Non-resettable Total = -64 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series brass and SS Only) = -72 Dual Relay Output = -98 Hinged Display Cover = -126 Internal Data Logger = -127 Sensus Smart Output (Includes 6' Cable) = -150

** 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.*
*** Output cable sold separately.*

User is responsible for reviewing end use application with their supplier for product suitability.