



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" (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.

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

Optional modular electronics available

Rugged cast aluminum housing

Compression nut for easy adjustment, secure locking

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

Rotor

Rotor housing

Removable jewel bearings

IP11x/21x

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)

Locking collar

Adapter mates with 2" FNPT threaded fitting

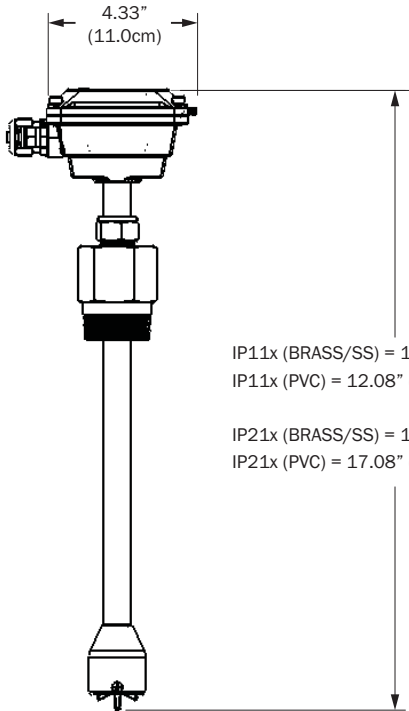
IP15x/25x

SPECIFICATIONS*

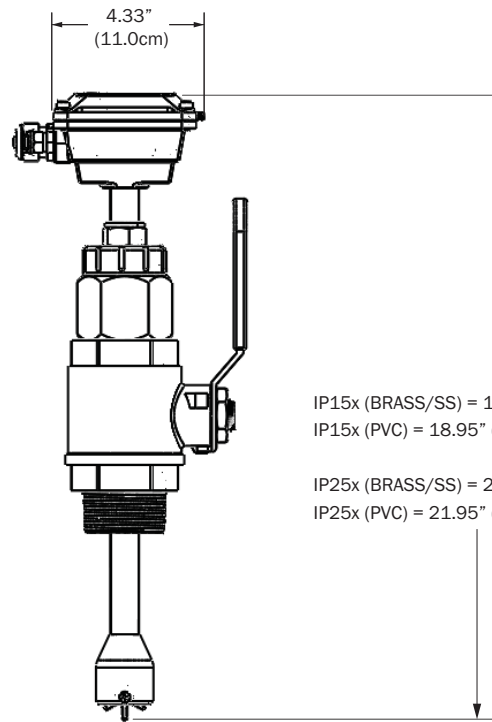
Power Source		Low Power	Micropowered (-04 Option)	
Supply Voltage/Current		6-40 Vdc/< 2 mA	3.1-16 Vdc/60 µA @ 3.6 Vdc	
Sensor		Digital Magnetoresistive	Giant Manetoresistance (GMR)	
Materials	Housing	Cast aluminum		
	Sensor Body	Brass, PVC or 316 SS		
	Rotor	PVDF (Kynar®)		
	Shaft	Kynar®/Tungsten Carbide (Kynar®/Ceramic or Kynar®/Silicon Carbide optional)		
	Bearings	Ruby jewel		
Isolation Ball Valve		IP11x/21x (Brass/SS)	IP15x/25x (Brass/SS)	PVC 11x/21x/15x/25x
		None	Bronze (316SS optional)	(PVC 150/250 use gate valve)
Fitting Size Required		1.5" FNPT	2" FNPT	2" FNPT
Accuracy		+/- 1.5% of full scale		
Maximum Temperature				
		Brass/SS	200° F (93° C)	
		PVC	130° F (55° C)	
Insertion Force				
		Brass/SS	200 psi (14 bar)	
		PVC	150 psi (10 bar)	
Maximum Pressure				
		Brass/SS	200 psi (14 bar)	
		PVC	150 psi (10 bar)	
Insertion Force		0.44 x pressure in pipe		
Output Transistor Maximum Current Sinking		150mA (low power version only)		
Cable		#22 AWG 3-con, 18' (6m); 2,000' (610m) maximum cable run		
Regulatory		CE Mark		

*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



IP11x (BRASS/SS) = 11.08" (28.1cm)
 IP11x (PVC) = 12.08" (30.7cm)
 IP21x (BRASS/SS) = 16.08" (40.8cm)
 IP21x (PVC) = 17.08" (43.4cm)

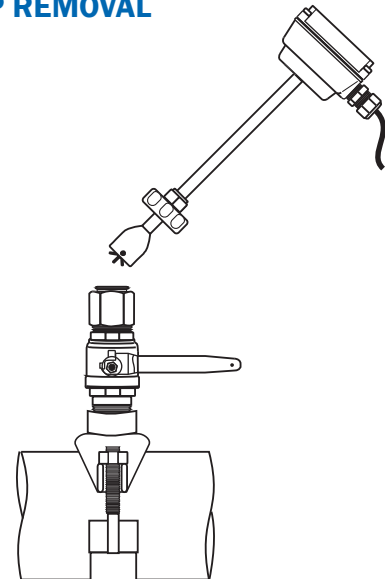


IP15x (BRASS/SS) = 17.95" (45.6cm)
 IP15x (PVC) = 18.95" (48.2cm)
 IP25x (BRASS/SS) = 21.95" (55.8cm)
 IP25x (PVC) = 21.95" (55.8cm)

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)	24.98	45.42	102.21	177.91	276.34	401.25	711.66	900.93	1597.44	2498.37	3599.93	4444.07
GPM Max (30ft/sec)	660	1200	2700	4700	7370	10600	18800	23800	42200	66000	95100	117400
LPM Max (9.1m/sec)	2498.37	4542.49	10220.61	17791.44	27898.48	40125.36	71165.74	90092.80	159744.40	249837.20	359992.70	444407.30

Approximations based on Schedule 40 pipe.



IP100/200-SERIES Insertion Paddlewheel Flow Sensor

HOW TO ORDER

	Description	Size	Material	Options (110/210)		Options (150/250)
Sensor Only	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 Std 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				
A055 Mounted on Sensor	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				
FT430 Mounted on Sensor	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 Tamper Evident 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 Tamper Evident 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				
DL76 Mounted on Sensor	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	Tamper Evident 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 Tamper Evident Kit = -32 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72
	Hot Tap	3" - 12" = IP156 12" - 40" = IP256				
FT450 Mounted on Sensor	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 Tamper Evident 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 Tamper Evident 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				
PD10 Mounted on Sensor	Pulse Divider (PD10) mounted on the sensor.	3" - 12" = IP118 12" - 40" = IP218	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 LMI Pump 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 10 Ft. Cable for LMI Connector = -37 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 LMI Pump 4-pin Connector = -06 316 SS Valve Assembly = -08 No Valve Assembly = -09 10' Cable for LMI Adapter = -37 Rotor (Kynar®/Silicon Carbide Shaft) = -68 12" Extension (200 Series Only) = -72 Roytronic® Series-A 5-Pin Connector = -106
	Hot Tap	3" - 12" = IP158 12" - 40" = IP258				
FT440 Mounted on Sensor	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 Tamper Evident 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 Tamper Evident 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.