

Fin Flow

FF-P Series

- New PFA and PTFE construction for use with pure water and chemicals
- Pulse flowmeter with paddle wheel's rotational velocity measured by a photodetector.
- Flow ranges from 100 mL/min to 50 L/min
- Useable to 50°C, 50 psi
- Flow indicators with 4 – 20 mA and other outputs available



FF	P	TYPE	LIQUID	UNITS	FLOW	OPTION
						Display Specify optional Toeco display version
						PF PF O-ring seal. (FPM is standard)
						P1 Select adjustable sensitivity for 12 VDC operation
						P2 Select adjustable sensitivity for 24 VDC operation
						Z Identify other display requirements such as PNP output (24 VDC only)
					MAX	Show maximum flow rate here. (See table of flow rates below)
				A	mL/min	
				B	L/min	
			1		Pure water	
			9		State liquid type at end of Model Number	
		Type			Flow Range	Pipe Size (OD x ID mm)
		50			20 ~ 100 mL/min	Adjustable sensitivity is NOT available with these versions
		100S			40 ~ 200 mL/	
					50 ~ 500 mL/ min	TV 1/4 (Φ 6.35 x 4.35)
		100			100 ~ 1000 mL/min	TV 3/8 (Φ 9.52 x 4.35)
					0.3 ~ 3 L/min	
		150			0.5 ~ 5 L/min	TV 1/2 (Φ 9.52 x 6.35)
					1 ~ 10 L/min	
		200			2 ~ 30 L/min	TV 3/4 (Φ 19.05 x 15.83)
					5 ~ 50 L/min	
		300				
		400				

Example of Model Number

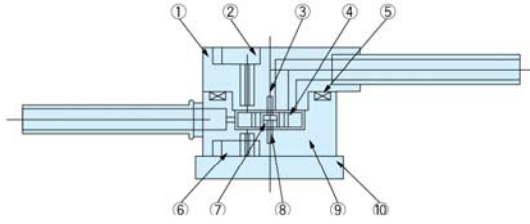
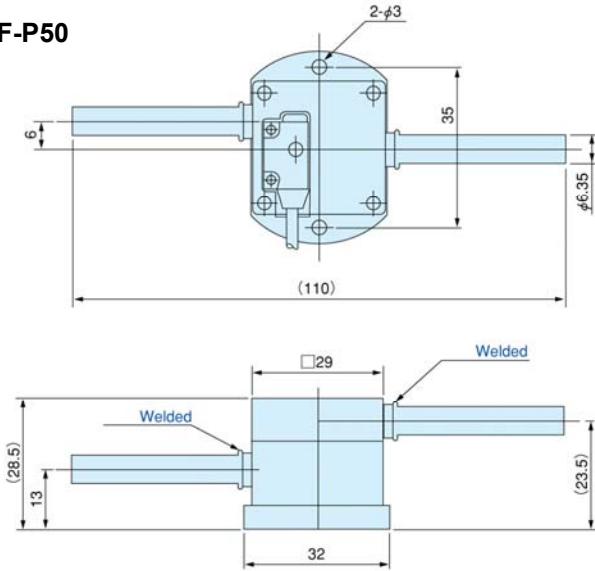
FF - P 100 - 1 - A 1000 - Display Option - Fluid characteristics if not water

Performance Specifications

Model Numbers	P50	P100S	P100	P150	P200	P300	P400
Output Accuracy	< ± 5% at Full Scale		< ± 3% at Full Scale				
Max. Operating Pressure	50 psi (0.35MPa)						
Operating Fluid Temperature	Maximum 50°C						
Ambient Temperature	Maximum 50°C						
Pulse Output Frequency	0 ~ 100 Hz						
Pulse Characteristics	Standard – NPN open collector 50mA at 30 VDC						
	NOT AVAILABLE		With Adjustable Sensitivity Option: NPN open collector, 80 mA max at 30 VDC				
Power Supply	Standard – 12 – 24 VDC 25mA Max						
	NOT AVAILABLE		With Adjustable Sensitivity Option: 12-24 VDC 37mA Max				
Cord Length	2m						

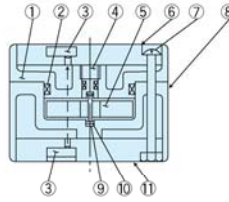
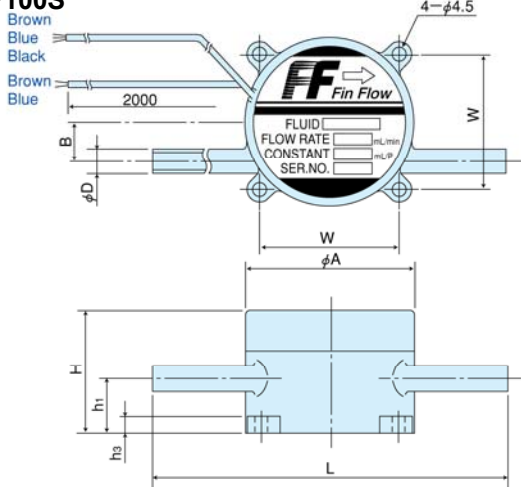
Outline Drawings and Dimensions

FF-P50



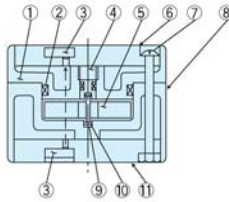
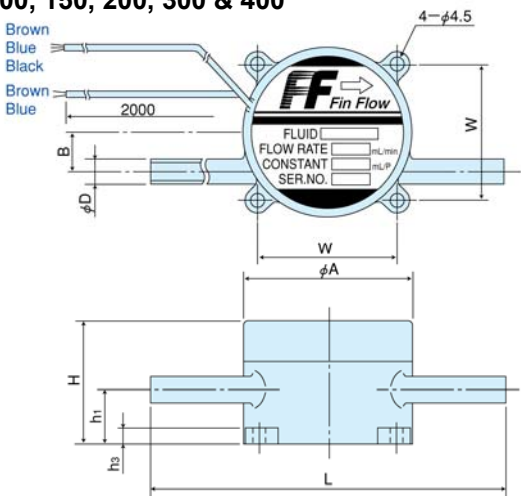
Item	Part Name	Material
1	Casing B	New PFA
2	Photosensor Detector	No liquid contact
3	Seals	Sapphire
4	Rotor	PTFE
5	O-ring	FPM (PF available)
6	Photosensor Source	No liquid contact
7	Bearing	Sapphire
8	Shaft	Sapphire
9	Casing A	New PFA
10	Bottom plate	Polypropylene

FF-P100S



Item	Part Name	Material
1	Casing A	New PFA
2	Top Plate	Polypropylene
3	Photosensor Detector	Polypropylene etc
4	Fin	PTFE
5	O-ring	FPM (PF & KR available)
6	Photosensor Source	Polypropylene etc
7	Adjustable sleeve	PFA
8	Bearing	Sapphire
9	Shaft	Sapphire
10	Bottom plate	Polypropylene
11	Casing B	New PFA

FF-P100, 150, 200, 300 & 400



Item	Part Name	Material
1	Casing B	PFA
2	O-ring	FPM (PF & KR available)
3	Photosensor Detector	Polypropylene etc
4	Adjustable Sleeve	PFA
5	Fin	PTFE
6	Top Plate	Polypropylene
7	Lock Bolt	304 Stainless Steel
8	Casing A	PFA
9	Bearing	Sapphire
10	Shaft	Sapphire
11	Bottom Plate	Polypropylene

Dimensions - mm

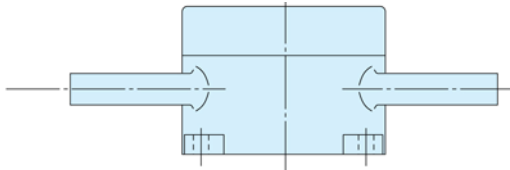
Type	Flow Range	L	Φ	W	H	h1	h2	h3	B	Φ TV
50	20 ~ 100 mL/min	Refer to the drawing above for all dimensions								
100S	40 ~ 200 mL/min	140	46	38	(42.5)	23	(31.5)	6	5.5	1/4
	50 ~ 500 mL/min									
100	100 ~ 1000 mL/min	140	46	38	41	17.5	-	6	5.5	1/4
150	0.3 ~ 3 L/min	180	61	50	45	20	-	4	13.5	3/8
	0.5 ~ 5 L/min									
200	1 ~ 10 L/min	200	61	50	55	24	-	9.5	11	1/2
300	2 ~ 30 L/min	230	70	50	63	32	-	9	13	3/4
400	5 ~ 50 L/min	240	82	60	73	35.5	-	9	13.5	3/4

Wiring

Wire color	Function
Brown	12-24 VDC
Black	Output signal
Blue	0 VDC

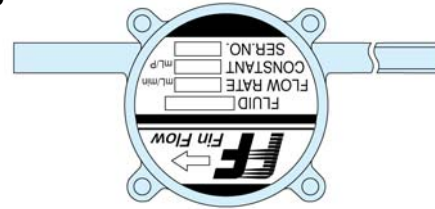
Installation positions

Types 50, 100, 150, 200 & 300



These flowmeter types must be mounted with the flat faces HORIZONTAL, with the label on TOP. Liquid **must** flow in the direction of the arrow for proper operation.

Type 400



This flowmeter must be mounted with the flat faces VERTICAL. Liquid **must** flow in the direction of the arrow for proper operation.

Photosensor Operation and precautions:

- The photosensor is comprised of two elements, the source, which emits light and the detector which triggered by light passing through the liquid.
- When a fin of the rotor interrupts prevents light from reaching the detector the pulse output is in an OFF state.
- When light reaches the detector through the spaces between adjacent fins of the rotor, the pulse output is in an ON state.
- *If the flowing liquid absorbs the light the detector may not receive enough light energy to be triggered.*
- *Air bubbles in the liquid stream may diffuse the light and the detector may not receive enough light to be triggered.*
- *Air bubbles in the liquid stream will also affect the resistance to rotor rotation and produce unstable and inaccurate results.*

LED's show you what's happening.

- Red and Green LEDs are visible through a small opening in the labeled face of the FF-P flowmeter.
- The Red LED is lit when a rotor fin has blocked light from reaching the detector, and is dark when light is reaching the detector.
- The Green LED is lit when the rotor is turning. It is lit when the rotor fin has blocked light from reaching the detector and when light is blocked from the detector. If the Green LED is dark – off – it indicates that a rotor fin is in a position to block half of the light from reaching the detector.
- *Each detector flashes on and off if the liquid is flowing through the flowmeter and light is reaching the detector. As the flow rate increases each LED flashes faster, and appears to be continuously lit.*

Exceptional flowmeters by **TOFCO**

World-class support by **Proteus**

Information in this document was correct at the time of printing; however, specifications are subject to change as Proteus Industries' continuous improvement processes establish new capabilities



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