PLF2000 Series

LIQUID FLOW SENSOR FOR WATER METERING

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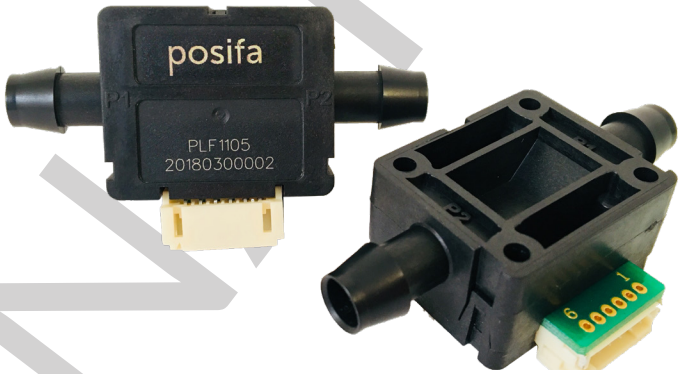
DESCRIPTION

Posifa designed the PLF2000 series of liquid flow sensors to replace mechanical turbine flow sensors. With a MEMS thermal flow die at its core, PLF2000 is far more accurate and repeatable, even when flow is pulsatile and provides a linear digital output. Because it has no moving parts, PLF2000 does not get stuck nor suffer mechanical breakdown. Cleaning does not require disassembly. Also, because it does not introduce an obstruction (i.e. turbine) in the flow path, it presents minimal flow resistance, making it possible to circulate liquid via gravity, a boiler, or a low-power pump.

PLF2000 features Posifa's third-generation thermal flow die, benefiting from the latest innovations in microfabrication. The sensor die uses a pair of thermopiles to detect changes in temperature gradient caused by mass flow, delivering excellent signal-to-noise, and repeatability. The "solid state" thermal isolation structure eliminates the need for surface cavity or fragile membrane used in competing technologies. The sensor die, with its silicon carbide protective film, is capable of direct contact with liquid, allowing the highest level of sensitivity and minimizing the cost of packaging.

PLF2000 complies with NSF/ANSI 61: Drinking Water System Components – Health Effects and can be used safely in water and beverage appliaces.

PLF2000 provides both analog (voltage) and digital I2C output.



APPLICATIONS

- Coffee and expresso machines
- Water dispensers
- Water purifers and fltration systems
- Beverage vending machines
- Detergent vending machines
- Cleaning chemical mixing systems
- Liquid cooling systems

FEATURES

- No moving parts
- Extremely fast response time (< 5 ms)
- Can be used with pulsatile flow systems
- Does not obstruct flow (low pressure drop)
- Disassembly not required for maintenance

MAXIMUM RATINGS

- Operating Temperature: 5 to 75 °C
- Storage Temperature: 5 to 80 °C
- Operating Pressure: 50 psi

PRELIMINARY

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SPECIFICATIONS

Test Conditions: Vin=5±0.01VDC, Ta=22°C.					
SPECIFICATIONS	**MIN**	**TYP**	**MAX**	**UNIT**	**CONDITIONS**
PLF2105	50		2600	ml/Min	
PLF2115	50		5000	ml/Min	
PLF2135	150		12000	ml/Min	
Output Count (calibrated)	409 to 3686			Count	
Null Count (calirbated)	380		440	Count	
Output Count (raw)	30000 to 45000			Count	
Output (calirbated)	0.5 to 4.5			Vdc	
Flow Repeatability		0.5		% F.S.	
Flow Response Time[1]		5		mSec	
Warm Up Time			5	Sec	
Operating Pressure			50	PSI	
Operating Temperature	5		75	C	
Storage Temperature	5		80	C	
Supply Voltage		5	5.5	VDC	
Supply Current		15		mA	at 5 VDC supply
Wetted Materials	NSF/ANSI 61 compliant nylon, silicone and food grade conformal coating				

PRELIMINARY

Notes:
1. 10% to 90% rise time of the flow sensor to electrically respond to any mass flow change. May be affected by the pneumatic interface.

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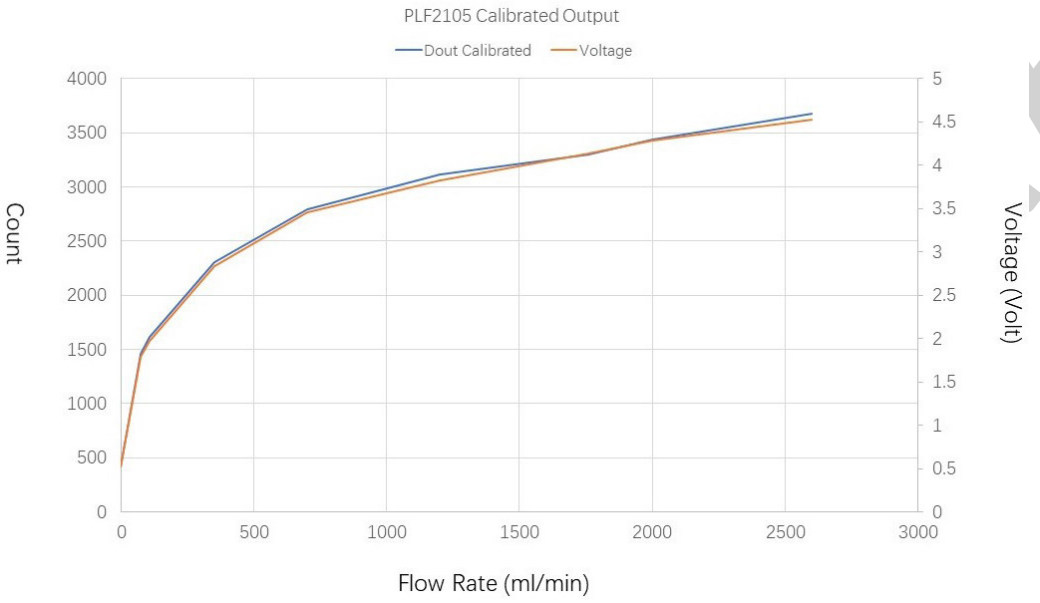
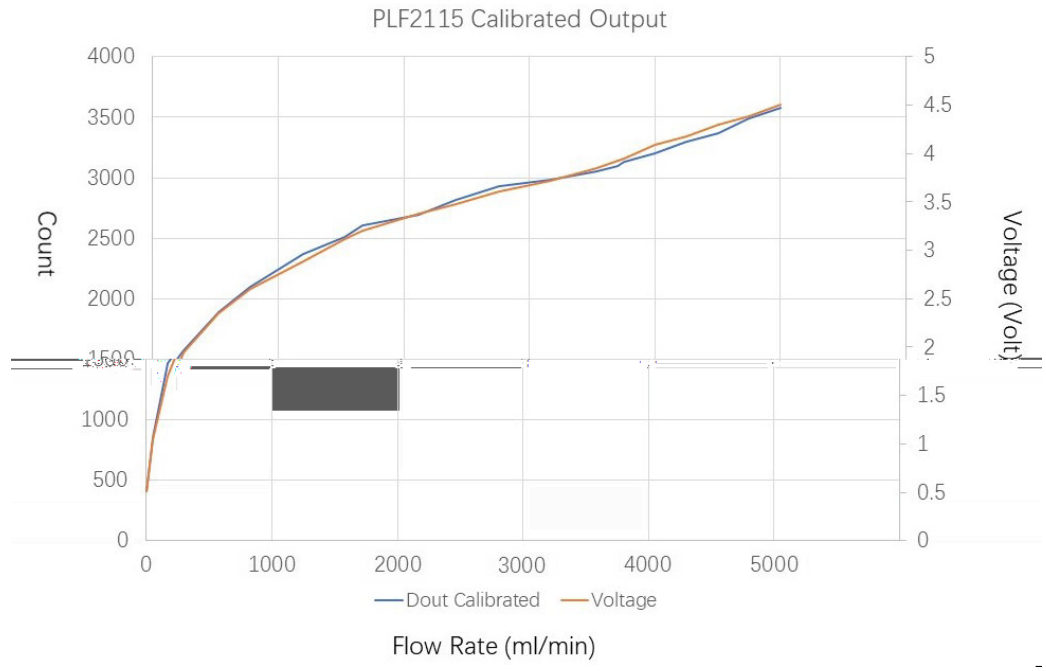
OUTPUT DESCRIPTION

For PLF2105



Flow (ml/min)	Output (Volt)	Count
0	0.52	420
72	1.79	1460
109	1.97	1612
350	2.83	2305
700	3.45	2795
1200	3.82	3115
1760	4.13	3300
2000	4.28	3437
2600	4.52	3676

For PLF2115



Flow (ml/min)	Output (Volt)	Count
0	0.51	412
50	1.05	853
525	2.35	1890
1195	2.89	2370
1530	3.12	2510
2120	3.38	2695
2760	3.61	2930
3530	3.75	3050
4500	4.32	3370
5000	4.52	3580

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OUTPUT DESCRIPTION

For PLF2135

Flow (ml/min)	Output (Volt)	Count
0	0.51	412
120	1.05	853
1260	2.35	1890
2870	2.89	2370
3675	3.12	2510
5060	3.38	2695
6625	3.61	2930
8480	3.75	3050
10800	4.32	3370
12000	4.52	3580

PRELIMINARY

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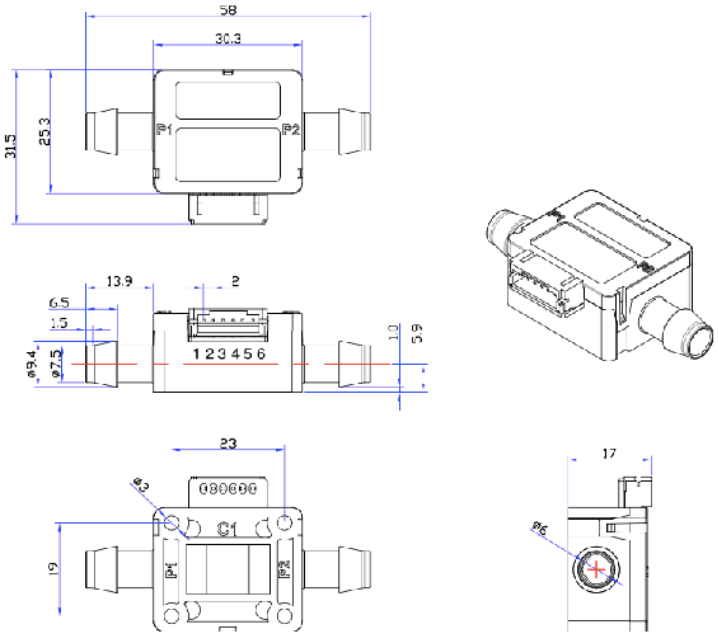
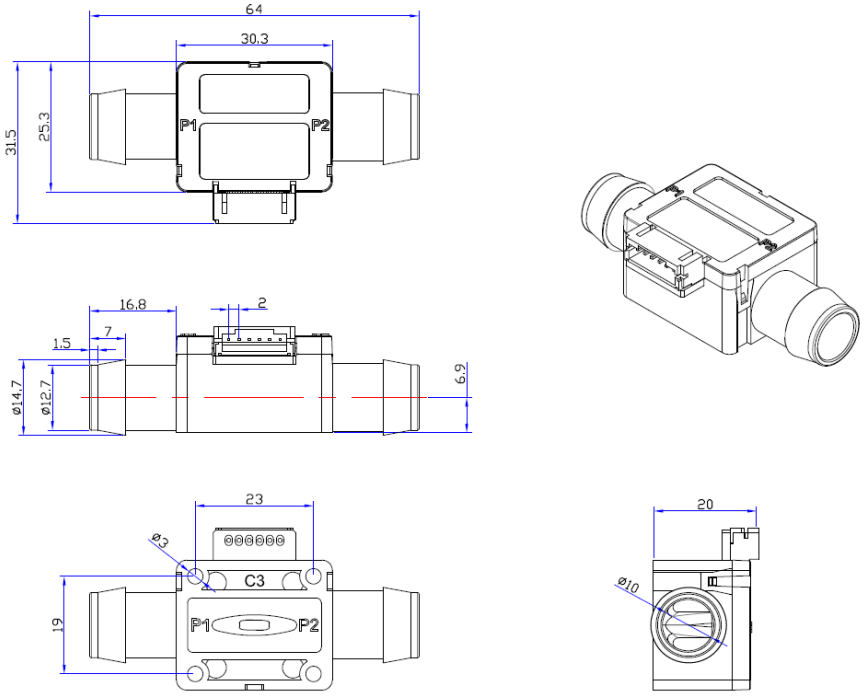
PACKAGE DIMENSIONS

PLF2105 and 2115



Contact Posifa for sensor CAD model.

Pin#	Description
1	VDD
2	GND
3	Out
4	SDA
5	SCL
6	N/C

PLF2135