

Steps for Precise Sensor Calibration

Proper calibration of Transonic flow sensors is critical in order to ensure that the sensor performs accurately for its specified application. Clamp-on tubing flow sensors can be calibrated for up to 4 unique combinations of tubing material, liquid type, flow rate, and liquid temperature.



Step 1

Determine the appropriate sensor size using the table below:

Transonic Sensor Size	Tubing Dimensions					
	Inner Diameter		Wall Thickness		Outer Diameter	
	<i>mm</i>	<i>inches</i>	<i>mm</i>	<i>inches</i>	<i>mm</i>	<i>inches</i>
2PXL	2.38	3/32	0.79	1/32	4	1/8 - 5/32
3PXL	3.18	1/8	0.79	1/32	5	3/16 - 7/32
4PXL	3.18	1/8	1.59	1/16	6	4/16
					7	4/16
5PXL	4.76	3/16	1.59	1/16	8	5/16
6PXL	6.35	1/4	1.59	1/16	9	6/16
7PXL	6.35	1/4	2.38	3/32	10	6/16
8PXL	9.53	3/8	1.59	1/16	12	8/16
	7.94	5/16	2.38	3/32	12	8/16
9PXL	9.53	3/8	2.38	3/32	14	9/16
10PXL	12.70	1/2	1.59	1/16	16	10/16
11PXL	12.70	1/2	2.38	3/32	16	10/16
12PXL	12.70	1/2	3.18	1/8	20	13/16
14PXL	15.88	5/8	3.18	1/8	23	7/8
	17.46	11/16	2.38	3/32	23	7/8
16PXL	19.05	3/4	3.18	1/8	25	1
20PXL	25.40	1	3.18	1/8	25	1

Steps for Precise Sensor Calibration (cont.)

Step 2

Specify the *liquid* that will be used in your tubing circuit, including component concentrations (e.g. % saline). Transonic Transit-time flow measurement (TTFM) supports a wide variety of liquids, including water, saline, blood, Glycerin, and Krebs-Ringer solution. Non-standard liquids are acceptable but require Material Safety Data Sheet and samples.

Step 3

Provide the liquid *temperature range* for your application. Transonic's standard temperature calibrations are 37° C ($\pm 2^\circ$) and 23°C ($\pm 2^\circ$). Calibration can also be performed at custom temperature ranges (specify minimum, average, and maximum expected temperature). For ranges greater than $\pm 2^\circ$, a custom quotation will be required.

Step 4

Determine the appropriate scale (i.e. flow range) for your sensor. Use the table below to determine which flow range lines-up best with your expected flow rates. Custom flow ranges can be accommodated for an additional fee.

Transonic Sensor Size	Low Flow (1/4 Scale)		Standard Flow (Full Scale)	
	Lower Linear Limit ^{1,2}	Max Measurement Range ³	Lower Linear Limit ^{1,2}	Max Measurement Range ³
2PXL	50 ml/min	-250 to +250 ml/min	100 ml/min	-1 to +1 L/min
3PXL	100 ml/min	-500 to +500 ml/min	200 ml/min	-2 to +2 L/min
4PXL, 5PXL, 6PXL	250 ml/min	-1.25 to +1.25 L/min	500 ml/min	-5 to +5 L/min
7PXL, 8PXL, 9PXL	500 ml/min	-2.5 to +2.5 L/min	1 L/min	-10 to +10 L/min
10PXL, 11PXL, 12PXL	1 L/min	-5 to +5 L/min	2 L/min	-20 to +20 L/min
14PXL, 16PXL	2.5 L/min	-12.5 to +12.5 L/min	5 L/min	-50 to +50 L/min
20PXL	5 L/min	-25 to +25 L/min	10 L/min	-100 to +100 L/min

¹ Measurements below the lower linear limit may deviate from the standard accuracy specification.

² Custom Calibration is available for average flow rates below the lower linear limit. This may compromise accuracy for the maximum measurement range.

³ Range includes zero. Any peaks in flow exceeding the max flow value will be clipped.