



1PXN

5PXN

10PXN

19PXN

25PXN

Precision Inline Flowsensors

ME-PXN-Series for TS410 Modules

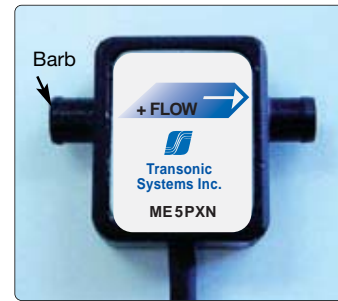
A Completely New Extracorporeal Inline Flowsensor for Enhanced Accuracy over a Wide Dynamic Range

PXN Inline Flowsensors splice into laboratory tubing and measure absolute volume flow of blood and other fluids. The new four-transducer sensor design offers precision accuracy for steady state and pulsatile flows from less than 1 ml/min to 100 liters/min. Flow range sensitivity is scaled to sensor size and flow is measured equally well across the full dynamic range of the sensor with little sensitivity to turbulence. The smooth round flow channel is easy to clean and does not trap air bubbles that can degrade ultrasonic performance. Sizes 4PXN - 25PXN have barbed ultem tubing ends to mate easily with flexible laboratory tubing. Miniature sizes 1PXN - 3PXN sensors are fabricated around flexible Pebax tubing. The Pebax tubing may be cut to length for insertion into small tubing circuits or perfusion apparatus. PXN-inline sensors can be calibrated and preprogrammed for up to four fluid/temperature combinations for highest accuracy performance in:

- ✓ Isolated organ studies
- ✓ Flow phantoms
- ✓ All applications requiring maximum volume flow sensitivity



ME 1PXN



ME 5PXN

INLINE SENSOR	PHYSICAL SPECIFICATIONS						ACCURACY SPECIFICATIONS								
	TUBING ID		BARB OD ¹		DIMENSIONS ²		BIDIRECTIONAL FLOW				ACCURACY			ULTRA-SOUND Frequency MHz	
	Catalog #	inches	mm	inches	mm	Total Length w/ tube ends mm	Case Length w/out ends mm	Resolution at 10 Hz ml/min	Low Flow 1 Volt = ml/min	Full Range 1 Volt = ml/min	Max Flow 5 Volt = ml/min	Maximum Zero Offset ³ ml/min	Absolute Accuracy %		Non-Linearity ⁴ %
ME1PXN	3/64	1.2		Pebax		100	6	± 0.02	5	20	100	± 0.4	± 8	± 2	9.6
ME2PXN	1/16	1.8		Pebax		100	9	± 0.02	10	40	200	± 0.6	± 4	± 2	9.6
ME3PXN	3/32	2.4		Pebax		100	12	± 0.05	25	100	500	± 1	± 4	± 2	7.2
ME4PXN	1/8	3.2	0.16	4.0		22	15	± 0.1	50	200	1 L	± 2	± 4	± 2	4.8
ME5PXN	3/16	4.8	0.23	5.8		31	20	± 0.2	100	400	2 L	± 4	± 4	± 2	3.6
ME6PXN	1/4	6.4	0.3	7.6		40	27	± 0.5	250	1 L	5 L	± 10	± 4	± 2	2.4
ME10PXN	3/8	9.5	0.44	11.1		57	39	± 1	500	2 L	10 L	± 20	± 4	± 2	1.8
ME13PXN	1/2	12.7	0.58	14.7		75	52	± 2	1 L	4 L	20 L	± 40	± 4	± 2	1.2
ME16PXN	5/8	15.9	0.72	18.2		91	63	± 5	2.5 L	10 L	50 L	± 70	± 4	± 2	0.9
ME19PXN	3/4	19.1	0.86	21.9		109	71	± 5	2.5 L	10 L	50 L	± 100	± 4	± 2	0.9
ME25PXN	1	25.4	1.14	29.0		146	100	± 10	5 L	20 L	100L	± 200	± 4	± 2	0.6

¹Subject to minor modification

²Standard cable length: 1.8 meters.

³ Zero offset can be eliminated by Zero Adjustment prior to measurement.

⁴ Over 5% to 100% of Maximum Flow

Ordering ME-PXN-Series Inline Flowsensors

Catalog # ME PXN - - -
(size) Calibration Codes (up to 4)

example: ME4PXN-BL37-KR37-FX37 is calibrated for 3 fluids at 37°C:
 blood, Krebs & custom cell culture

Flowmeter Compatibility: TS410 400-Series Flowmeter Module

Size: Scaled to insert into flexible tubing internal diameter
 (See PXN specification table for ID and barb spec.)

How to Choose the Most Appropriate Inline Sensor

Tubing Diameter: The sensor that most closely matches the circuit tubing ID should be used so that perturbations in fluid dynamics are minimized. Narrowing or steps down in tubing diameter can add resistance to flow.

Expected Flow Rate: Transonic flowsensor sizes are scaled to achieve the highest resolution in measurement. The smaller the sensor, the higher the sensitivity to low volume flows and the lower the offset at zero flow (see specifications). All PXN sensors have two dynamic flow ranges and are linear to +/- 5 volts. Choose the sensor that will best match the anticipated flow rate. PXN sensors may also be calibrated for highest sensitivity if the estimated flow range is specified when ordering. (See table)

Fluid / Temperature Calibration: Specify up to 4 fluid/temperature combinations for calibration from the codes listed in the table below. Fluid samples and a MSDS may be required for custom calibration requests (contact Customer Service).

FLUID/TEMPERATURE	23°C	37°C	CUSTOM TEMPERATURE specify
WATER/SALINE	H ₂ 023	H ₂ 037	H ₂ 0TX
BLOOD	BL23	BL37	BLTX
GLYCERINE 40%, WATER 60% (BY VOLUME)*	GL23	GL37	GLTX
GLYCERINE CUSTOM CONC	GLX23	GLX37	GLXTX
KREBS SOLUTION	KR23	KR37	KRTX
CUSTOM FLUID	FX23	FX37	FXTX

X designates custom calibration for extra charge
 * Glycerine calibration: custom for 1PXN, 2PXN, 3PXN

Connector Type



CP16: Plastic 16-pin for TS410
 Standard on 1PXN-6PXN



CC16: Metal 16-pin for TS410
 Standard on 10PXN - 25PXN

Extension Cable for TS410

CC16-S-CC16 Standard 1 meter length

CC16-X-CC16 Custom length for MRI use (specify; may not apply for all sensor sizes)



INFORMATION NEEDED TO CALIBRATE SENSOR

- Fluid (blood, saline, other)
- Operational temperature
- Flow ranges expected

FLOW CALIBRATION RANGES	LOW	NORMAL
1PXN	2 - 10 ml	10 - 40 ml
2PXN	5 - 20 ml	20 - 80 ml
3PXN	10 - 50 ml	50 - 200 ml
4PXN	20 - 100 ml	100 - 400 ml
5PXN	40 - 200 ml	200 - 800 ml
6PXN	100 - 500 ml	0.5 - 2 L
10PXN	0.25 - 1L	1 - 7 L
13PXN	0.5 - 2L	2 - 10 L
16PXN, 19PXN	1 - 5 L	5 - 20 L
25PXN	2 - 10 L	5 - 25 L

Note: the ranges listed represent the actual flow volumes for calibration. Lower or higher flow may be requested.



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