

Metallux ME670 monolithic pressure sensor are made with ceramic cell and work following the piezoresistive principle. Metallux ME670 sensors offset is adjustable following customers' specification and the sensors are also available thermally compensated by laser-adjustable PTC resistors. The Wheatstone bridge is screen printed directly on one side of the ceramic diaphragm by means of Thick Film technology. Layout is optimized to allow easy mounting of signal conditioning PCB when requested.

The diaphragm's opposite side can be exposed directly to the medium to be measured. Because of the Al₂O₃ ceramic excellent chemical resistance (aggressive gases, most of solvents and acids, etc.), no additional protection is normally required. Thanks to the reinforced outer area (monolithic structure), the sensor can be mounted in a plastic or metallic case by using O-ring.

ME670 sensors are designed in such a way so that temperature changes and pressure overloads do not cause loss in reliability. Use of ceramic ensures high linearity across the entire range of measurement and minimizes effects of hysteresis.

FEATURES

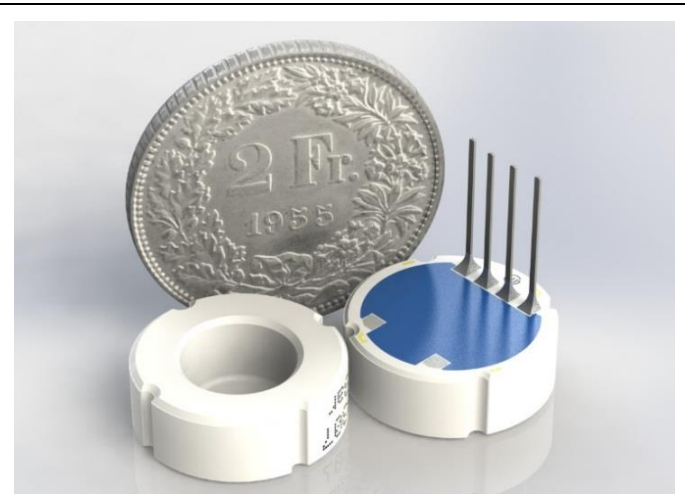
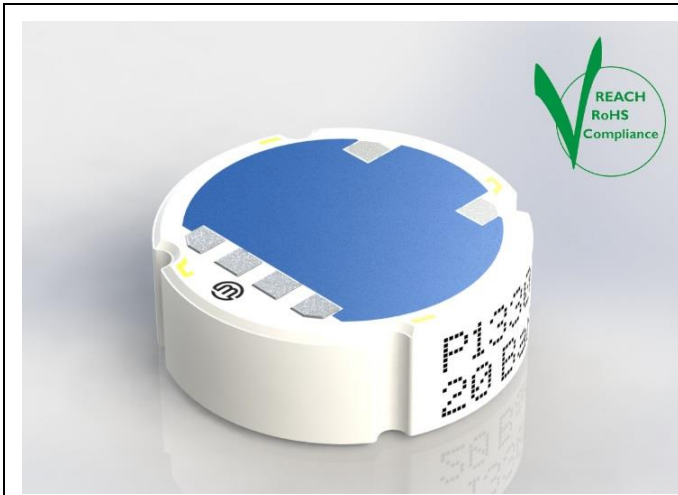
Excellent resistance to corrosion and abrasion

Wide choice of measuring ranges

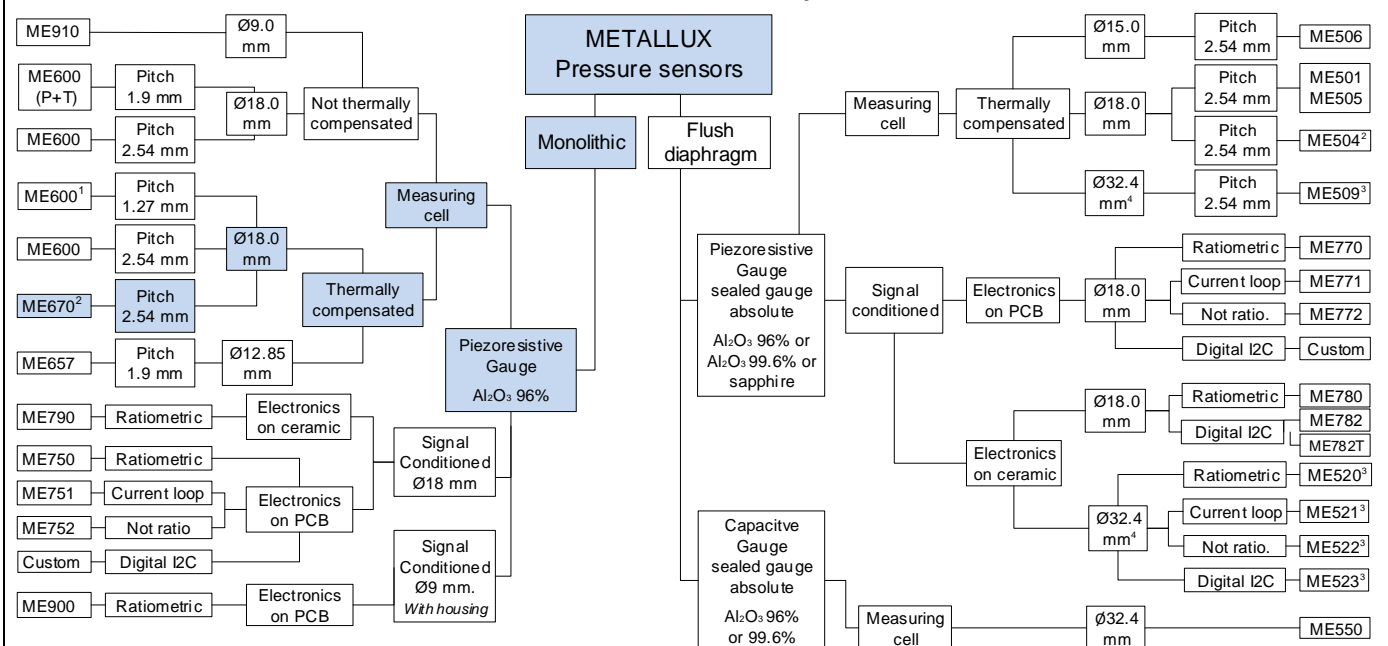
Easy mounting

Customizable

Optimized for PCB mounting



Pressure sensors family tree



¹ Also available in not thermally compensated version

² Digitally trimmed offset, also available not thermally compensated

³ Not available with sapphire diaphragm.

⁴ Suitable for low pressure range (≤ 1 bar)

Technical characteristics

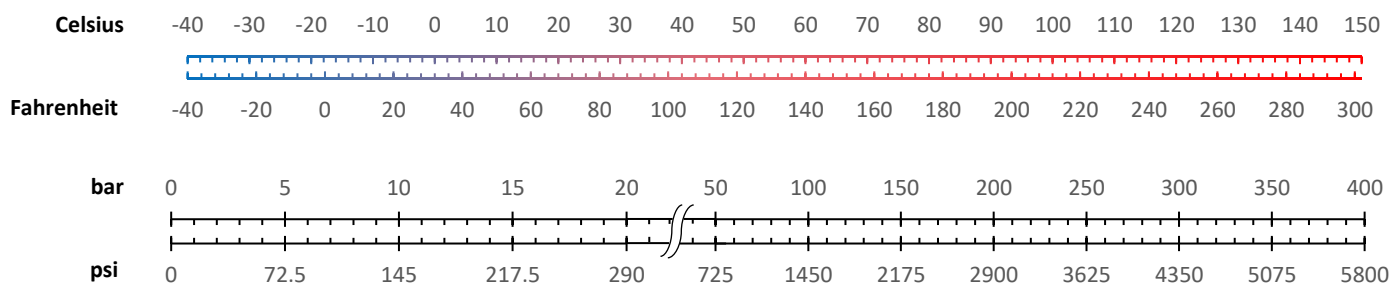
Parameters	Units	Description
Sensor type	-	Monolithic, gauge
Technology	-	Piezoresistive
Material	-	Ceramic Al ₂ O ₃ 96%
Weight	g	≤ 5 (ceramic cell only)
Response time	ms	≤ 1
Supply voltage range	VDC	2...30
Offset	mV/V	0.0 ± 5.0 (Other nominal values available on request)
Current consumption	mA	≤ 1.3 @ 10V
Operating temperature	°C	-40...+135 (-40 °F...+275 °F)
Storage temperature	°C	-40...+150 (-40 °F...+302 °F)
Bridge impedance	kΩ	10 ± 30%
Compliant with	-	REACH, RoHS, Conflict Minerals free

Nominal pressure FSO	bar	2	5	10	20	50	100	200	250	400
	psi ¹	29	73	145	290	725	1450	2900	3625	5800
Overload pressure	bar	4	10	20	40	100	150	300	375	500
	psi ¹	58	145	290	580	1450	2175	4350	5440	7250
Burst pressure	bar	8	20	35	60	140	300	400	500	650
	psi ¹	116	290	507	870	2030	4350	5800	7250	9425
Vacuum capability	bar	-1	-1	-1	-1	-1	-1	-1	-1	-1
	psi ¹	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5
Sensitivity ²	mV/V	1.8...3.4	2.0...3.5	2.4...4.0	2.8...4.2	2.7...4.0	2.0...3.2	1.8...3.3	1.5...3.0	1.5...3.0
Accuracy ³ (typ./max.)	%FS	0.15/0.50	0.15/0.30	0.15/0.30	0.15/0.30	0.25/0.60	0.50/1.00	0.50/1.00	0.50/1.00	0.60/1.20
Thermal offset shift (typ./max.)	%FS/K	± 0.03 / ± 0.07		+25 °C...+85 °C (+77 °F...+185 °F)		Not compensated				
		± 0.01 / ± 0.03		+25 °C...+85 °C (+77 °F...+185 °F)		Compensated				
Thermal span shift	%FS/K	Min. -0.030	Typ. -0.016	Max. 0	-40 °C...+135 °C (-40 °F... / ... +275 °F)					
Reliability tests ⁴	-	1000 hours @85 °C (185 °F) & 85 %RH			500 thermal shocks -40°C...+150 °C (-40 °F...+302 °F)					
		1000 hours burn-in @150 °C (302 °F)			10 million 0 bar to P _{nom} pressure cycles					

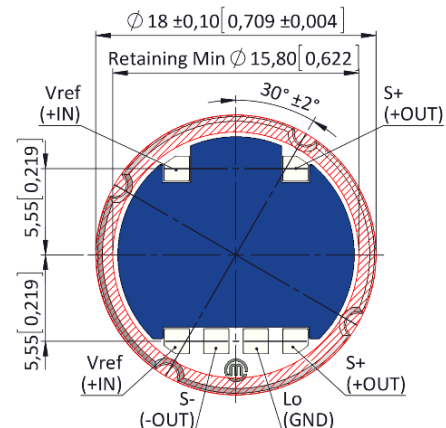
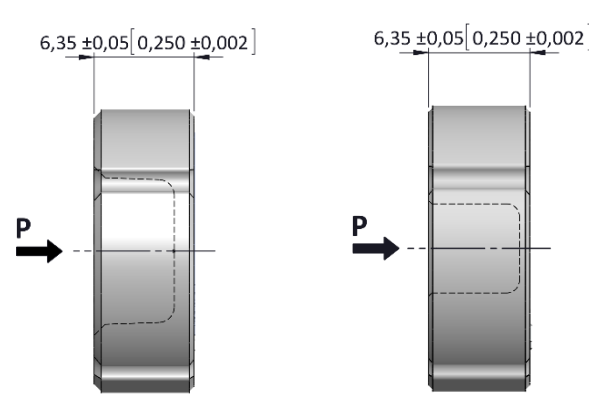
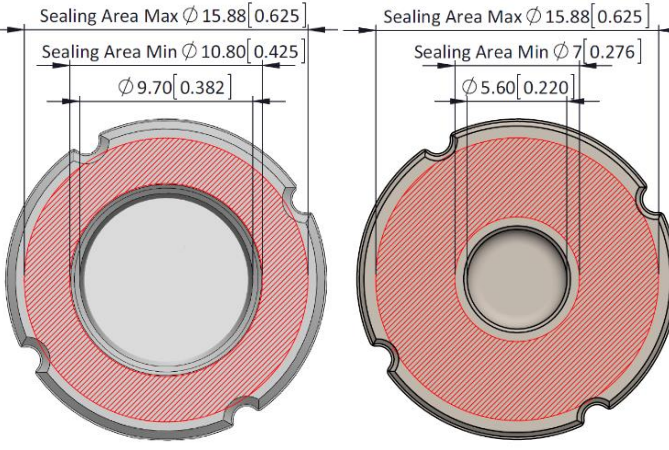
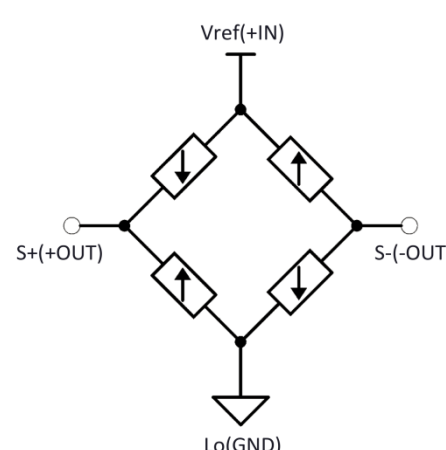
Tests performed at 25°C in Metallux housings, unless otherwise specified. Different housings may affect performances.

1. Psi values for reference only.
2. The sensitivity of each production batch is constant, within the indicated range and with minimal dispersion.
3. Accuracy = $\sqrt{\text{NonLinearity}^2 + \text{Hysteresis}^2 + \text{NonRepeatability}^2}$, terminal based.
4. All technical characteristics will remain within indicated ranges performing the above-mentioned reliability tests.

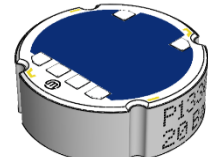
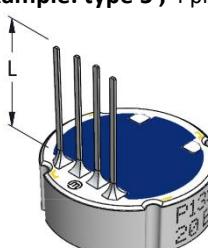
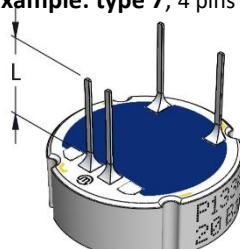
Conversion tools



Mechanical drawings and electrical schematics

Top View	Side View
 <p> $\varnothing 18 \pm 0,10 [0,709 \pm 0,004]$ Retaining Min $\varnothing 15,80 [0,622]$ $30^\circ \pm 2^\circ$ $5,55 [0,219]$ $5,55 [0,219]$ Vref (+IN) S+ (+OUT) Vref (+IN) S- (-OUT) Lo (GND) S+ (+OUT) (6x) Pads 1,6x1,6 [0,063x0,063] Pitch=2,54 [0,1] </p>	 <p> $6,35 \pm 0,05 [0,250 \pm 0,002]$ $6,35 \pm 0,05 [0,250 \pm 0,002]$ P P Pnom < 100 bar Pnom ≥ 100 bar For internal sealing, please refer to our mounting proposal </p>
Bottom View	Schematics
 <p> Sealing Area Max $\varnothing 15,88 [0,625]$ Sealing Area Max $\varnothing 15,88 [0,625]$ Sealing Area Min $\varnothing 10,80 [0,425]$ Sealing Area Min $\varnothing 7 [0,276]$ $\varnothing 9,70 [0,382]$ $\varnothing 5,60 [0,220]$ Pnom < 100 bar Pnom ≥ 100 bar </p>	 <p> Vref(+IN) S+(+OUT) S-(-OUT) Lo(GND) </p>
<p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p>	

Electrical terminations

<p>Example: type 1 , pre-tinned soldering pads</p>  <p> <u>Pitch:</u> $2.54 \pm 0.05 [0.1 \pm 0.002]$ <u>Maximum tin thickness:</u> 0.3 [0.01] <u>Op. Temp:</u> $-40^\circ\text{C} \div +135^\circ\text{C} (-40^\circ\text{F} \div 275^\circ\text{F})$ </p>	<p>Example: type 5 , 4 pins on single line $L = 13 \pm 0.5 [0.39 \pm 0.02]$</p>  <p> <u>Pitch:</u> $2.54 \pm 0.05 [0.1 \pm 0.002]$ <u>Pin section:</u> $\varnothing 0.5 \pm 0.004 [0.02 \times 0.0002]$ <u>Pin length:</u> $L = 13 \pm 0.5 [0.51 \pm 0.02]$ <u>Op. Temp:</u> $-40^\circ\text{C} \div +135^\circ\text{C} (-40^\circ\text{F} \div 275^\circ\text{F})$ </p>
<p>Example: type 7 , 4 pins on two lines $L = 9 \pm 0.5 [0.35 \pm 0.02]$</p>  <p> <u>Upper line pitch:</u> $7.62 \pm 0.05 [0.3 \pm 0.002]$ <u>Lower line pitch:</u> $2.54 \pm 0.05 [0.1 \pm 0.002]$ <u>Pin section:</u> $\varnothing 0.5 \pm 0.004 [0.02 \times 0.0002]$ <u>Pin length:</u> $L = 9.0 \pm 0.5 [0.35 \pm 0.02]$ <u>Op. Temp:</u> $-40^\circ\text{C} \div +135^\circ\text{C} (-40^\circ\text{F} \div 275^\circ\text{F})$ </p>	<p>Other types available</p> <ul style="list-style-type: none"> Type 2, separated wires on one line Type 3, pins on single line $L = 5 \pm 0.5 [0.2 \pm 0.02]$ Type 4, pins on single line $L = 9 \pm 0.5 [0.35 \pm 0.02]$ Type 5, pins on single line $L = 13 \pm 0.5 [0.51 \pm 0.02]$ Type 6, pins on two lines $L = 5 \pm 0.5 [0.2 \pm 0.02]$ Type 7, pins on two lines $L = 9 \pm 0.5 [0.35 \pm 0.02]$ Type 9, customization on request
<p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p>	

Ordering code

	ME670	---	-	-	-	-
Pressure range	0...2 bar [0...29 psi]	002				
	0...5 bar [0...72 psi]	005				
	0...10 bar [0...145 psi]	010				
	0...20 bar [0...290 psi]	020				
	0...50 bar [0...725 psi]	050				
	0...100 bar [0...1450 psi]	100				
	0...200 bar [0...2900 psi]	200				
	0...250 bar [0...3625 psi]	250				
	0...400 bar [0...5800 psi]	400				
	Others on request (please specify)	999				
Offset adjustment	0 ± 5 mV/V		0			
	5 ± 5 mV/V		1			
	-5 ± 5 mV/V		2			
	0 ± 50 mV/V		3			
Thermal offset drift adjustment	≤ ± 0.07 %FS/K (not thermally compensated)			0		
	≤ ± 0.03 %FS/K (thermally compensated)			1		
Additional coating	Without				0	
	Parylene coating				1	
	Others on request (please specify)				9	
Termination type	pre-tinned soldering pads, pitch 2.54 mm					1
	4 separated wires on single line					2
	4 pins on single line L = 5 ± 0.5 mm, pitch 2.54 mm					3
	4 pins on single line L = 9 ± 0.5 mm, pitch 2.54 mm					4
	4 pins on single line L = 13 ± 0.5 mm, pitch 2.54 mm					5
	4 pins on two lines L = 5 ± 0.5 mm					6
	4 pins on two lines L = 9 ± 0.5 mm					7
	Others on request (please specify)					9



your distributor

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To be disposed of according to local regulations (OTRif 16 02 97 for Switzerland, CER 16 02 16 for European Union)