



Swiss technology at your service

Metallux ME504 pressure sensors are made with a ceramic base plate and a flush diaphragm and work following the piezoresistive principle.

The Wheatstone bridge is screen printed on one side of the flush ceramic diaphragm which is, in turn, glued to the sensor's body. The bridge faces the inside where a cavity is made and the diaphragm's opposite side can therefore 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.

On the sensor body, layout is optimized to allow easy mounting of signal conditioning PCB when requested.

Metallux ME504 sensors are thermally compensated by laser-adjustable PTC resistors and the use of ceramic ensures a high linearity across the entire range of measurement, reducing effects of hysteresis to a minimum.

FEATURES

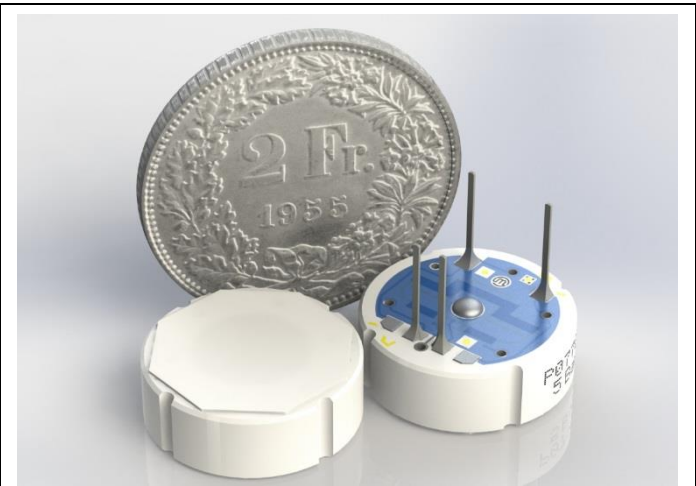
Excellent resistance to corrosion and abrasion

Absolute measurement available

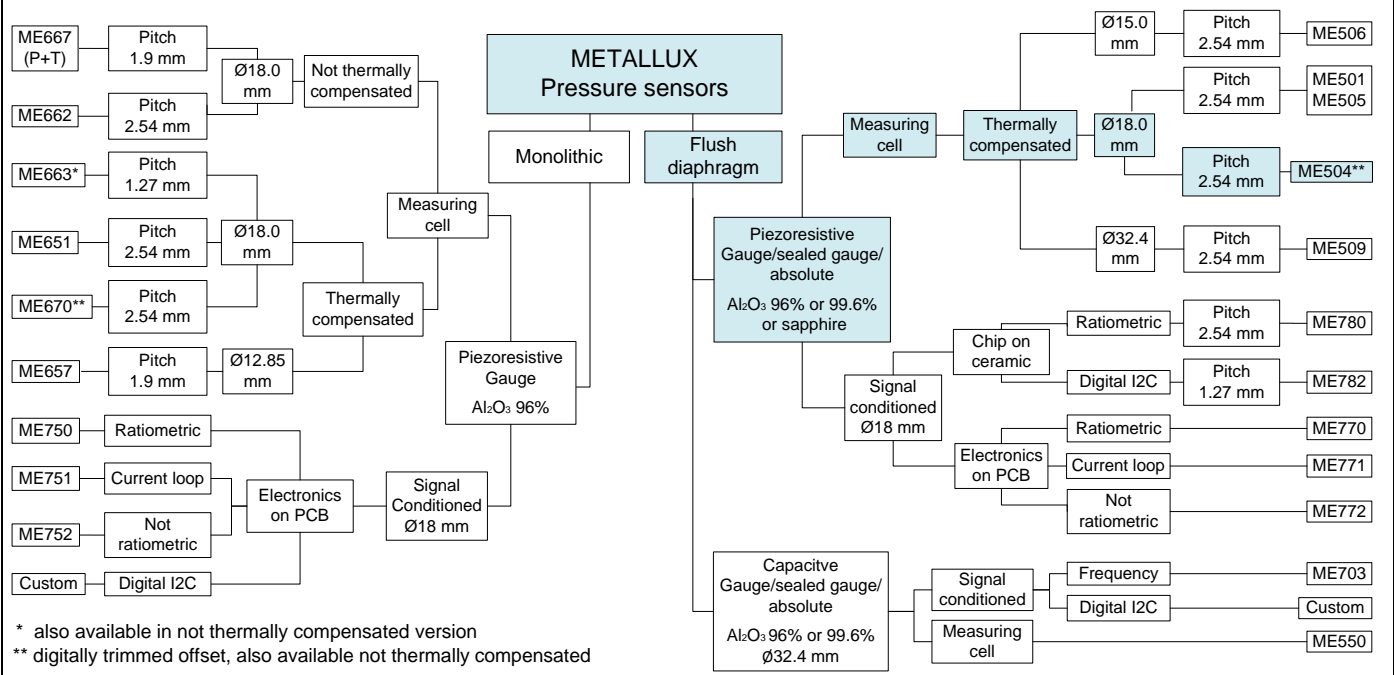
Thermally compensated

Optimized for PCB mounting

Extended choice of measuring ranges



Pressure sensors family tree





Technical characteristics

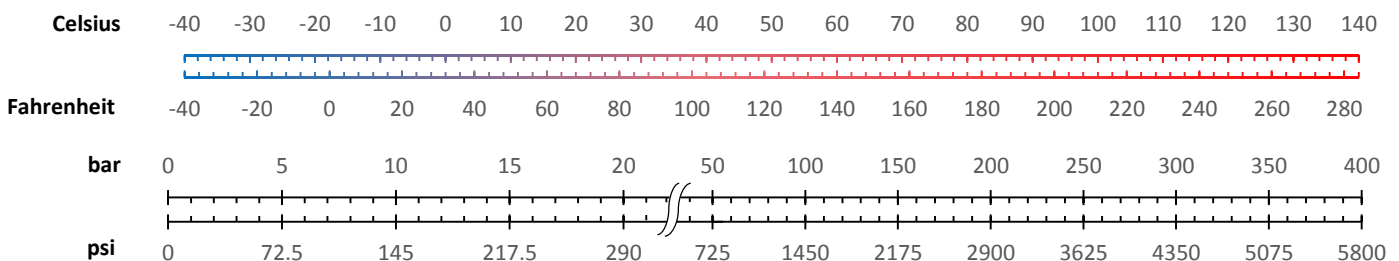
Parameters	Units	Description
Sensor type	-	Flush diaphragm, absolute (A), gauge (R) or sealed gauge (S)
Technology	-	Piezoresistive
Diaphragm material	-	Ceramic Al ₂ O ₃ 96%, 99.6% or sapphire
Weight	g	≤ 8 (ceramic cell only)
Response time	ms	≤ 1
Supply voltage	VDC	2...30
Offset	mV/V	0 ± 5 (Other nominal values available on request)
Current cons.	mA	≤ 1.3 @ 10V
Operating temperature	°C	-40...+135 (-40 °F...+275 °F)
Storage temperature	°C	-40...+150 (-40 °F...+302 °F)
Impedance	kΩ	11 ± 30%
Compliant with	-	REACH, RoHS, Conflict Minerals Free

		ME504											
Nominal pressure FSO	bar	0.5	1	2	5	10	20	50	100	200	400	600	800
	psi ¹	7	14	29	73	145	290	725	1450	2900	5800	8700	11600
Overload pressure	bar	1	2	4	10	15	35	100	150	350	500	750	1000
	psi ¹	14	29	58	145	217	507	1450	2175	5075	7250	10875	14500
Burst pressure	bar	2	3	6	12	20	50	120	200	500	650	950	1250
	psi ¹	29	43	87	174	290	725	1740	2900	7250	9425	13775	18125
Vacuum capability	bar	-0.1	-0.5	-0.5	-1	-1	-1	-1	-1	-1	-1	-1	-1
	psi ¹	-1.4	-7	-7	-14	-14	-14	-14	-14	-14	-14	-14	-14
Pressure type	-	R	A / R / S	A / R / S	A / R / S	A / R / S	A / R / S	A / R / S	S	S	S	S	S
	mm	6.15	6.17	6.23	6.30	6.35	6.55	6.70	6.70	7.05	7.32	7.55	8.05
Total thickness	in	0.242	0.243	0.245	0.248	0.250	0.258	0.263	0.263	0.278	0.288	0.297	0.317
	Sensitivity ²	mV/V	1.4...2.4	2.0...3.6	2.0...3.5	2.3...4.0	3.4...6.0	2.4...4.0	4.0...6.0	3.0...4.8	2.5...3.9	3.1...4.8	3.1...4.8
Accuracy ³ (typ./max.)	%FS	0.4/0.9	0.3/0.9	0.3/0.6	0.2/0.4	0.2/0.5	0.2/0.5	0.2/0.5	0.2/0.5	0.4/0.8	0.5/1.0	0.5/1.0	0.5/1.0
	Thermal offset shift (typ./max.)	%FS/K	± 0.005 / ± 0.030				25 °C...85 °C				(77 °F...185 °F)		
Thermal span shift	%FS/K	≤ ± 0.010				0 °C...70 °C				(32 °F...158 °F)			
		≤ ± 0.012				-25 °C...0 °C / 70 °C...85 °C				(-13 °F...32 °F / 158 °F...185 °F)			
		≤ ± 0.014				-40 °C...-25 °C / 85 °C...135 °C				(-40 °F...-13 °F / 185 °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					

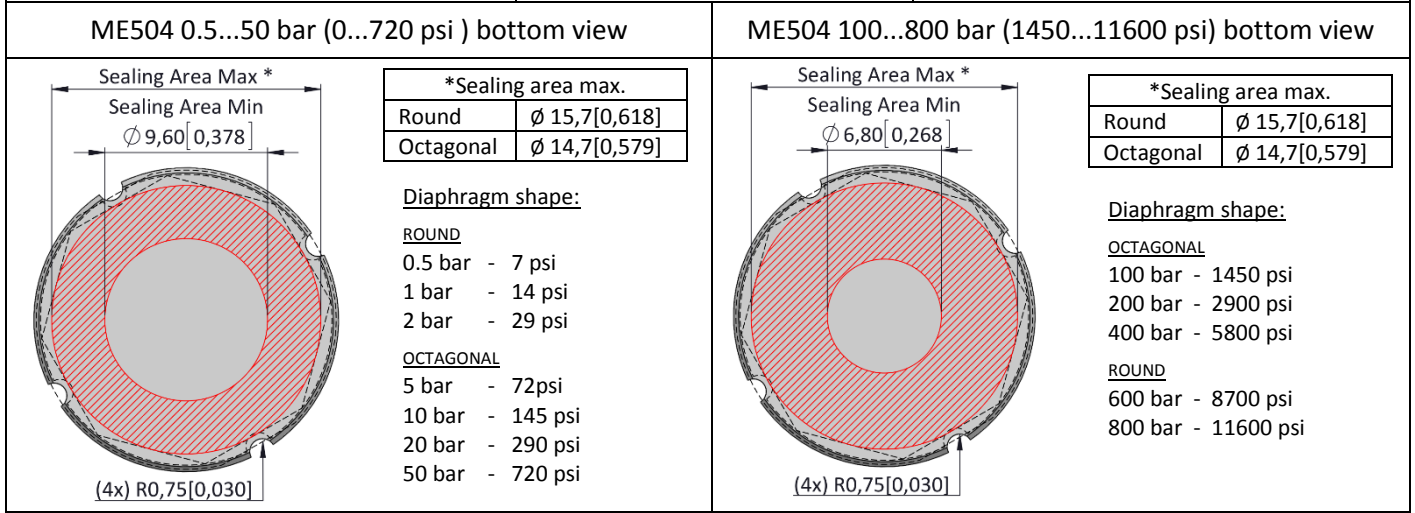
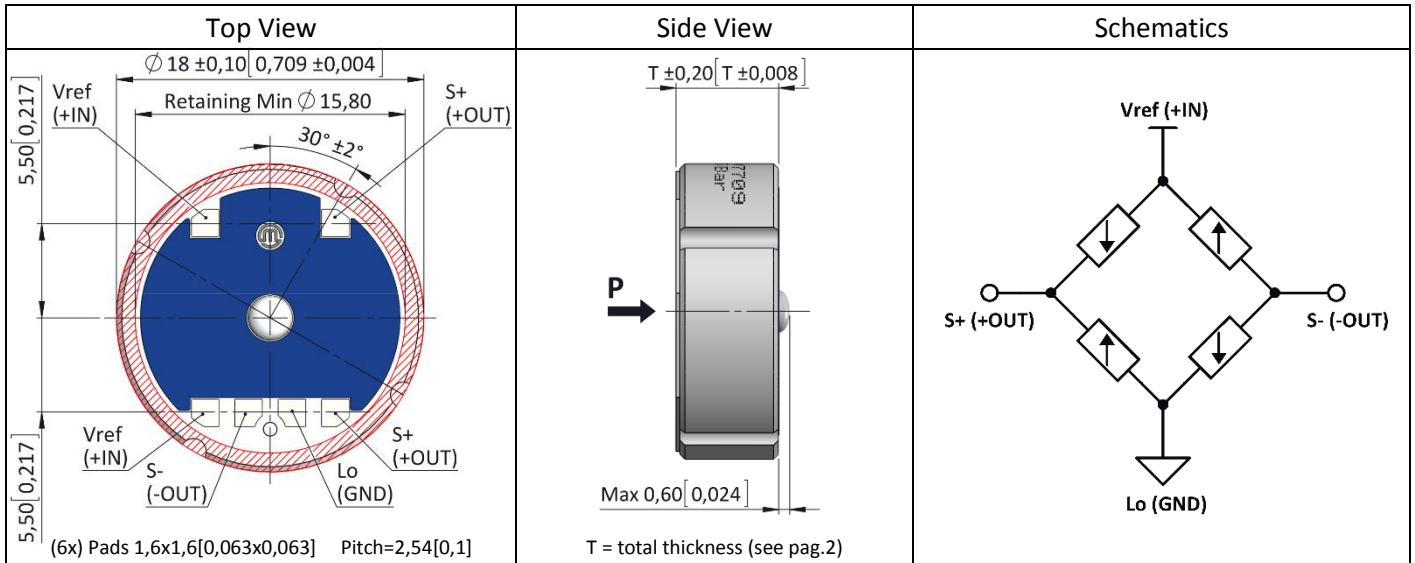
Tests performed at 25°C in Metallux housings, unless otherwise specified. Different housings may affect performances.

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

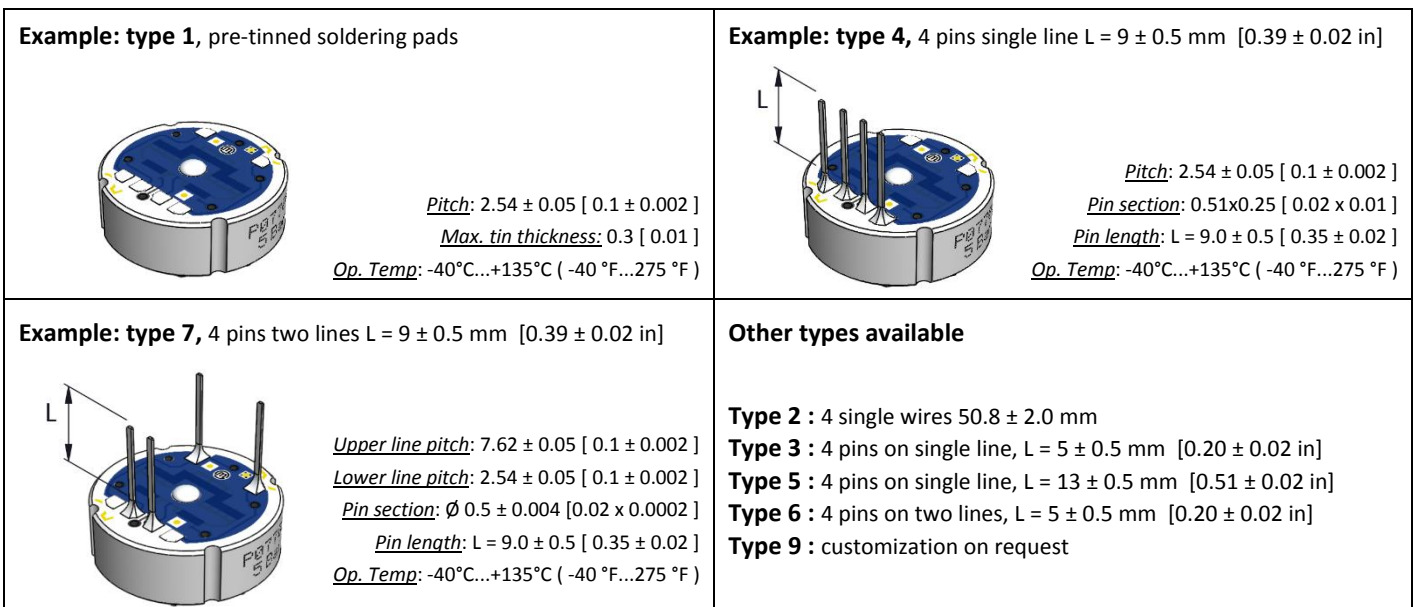


Mechanical drawings and electrical schematics



All quotes are in mm [inch] – General tolerance ISO 2768-1 M

Electrical terminations



All quotes are in mm [inch] – General tolerance ISO 2768-1 M



Ordering code

	ME504	-	---	-	-	-	---	-	-
Sensor type	Absolute	A							
	Gauge	R							
	Sealed Gauge	S							
Pressure range	0...0.5 bar [0...7 psi] (-/R/-)	Op5							
	0...1 bar [0...14 psi] (A/R/S)	001							
	0...2 bar [0...29 psi] (A/R/S)	002							
	0...5 bar [0...72 psi] (A/R/S)	005							
	0...10 bar [0...145 psi] (A/R/S)	010							
	0...20 bar [0...290 psi] (A/R/S)	020							
	0...50 bar [0...720 psi] (A/R/S)	050							
	0...100 bar [0...1450 psi] (-/-/S)	100							
	0...200 bar [0...2900 psi] (-/-/S)	200							
	0...400 bar [0...5800 psi] (-/-/S)	400							
	0...600 bar [0...8700 psi] (-/-/S)	600							
	0...800 bar [0...11600 psi] (-/-/S)	800							
	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 (not trimmed)							3		
Others on request (please specify)							9		
Thermal offset shift adjustment	≤ 0.07 % FS/K (not thermally compensated)						0		
	≤ 0.03 % FS/K						1		
	Others on request (please specify)						9		
Ceramic type	Ceramic Al ₂ O ₃ 96.0%						0		
	Ceramic Al ₂ O ₃ 99.6%						1		
	Sapphire						2		
Additional coating	Without						0		
	Parylene						1		
	others on request (please specify)						9		
Venting hole pipe	Without						0		
	Metal pipe Ø1.2 mm (gauge version only)						1		
	Others on request (please specify)						9		
Termination type	4 Pre-tinned soldering pads, pitch 2.54 mm								1
	4 wires on single line, 50.8 ± 2.0 mm								2
	4 pins on single line, 5 mm ± 0.5 mm								3
	4 pins on single line, 9 mm ± 0.5 mm								4
	4 pins on single line, 13 mm ± 0.5 mm								5
	4 pins on two lines, 5 mm ± 0.5 mm								6
	4 pins on two lines, 9 mm ± 0.5 mm								7
	Others on request (please specify)								9