

ME500 pressure sensors are made with a ceramic base plate and a flush diaphragm, and they operate 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 base plate. 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 Al_2O_3 ceramic excellent chemical resistance (aggressive gases, most of solvents and acids, etc.), no additional protection is normally required.

Metallux ME500 sensors are thermally compensated by laser-adjustable PTC resistors and the use of ceramics ensures a high linearity across the entire range of measurements, reducing effects of hysteresis to a minimum.

FEATURES

Excellent resistance to corrosion and abrasion

Absolute measurement available

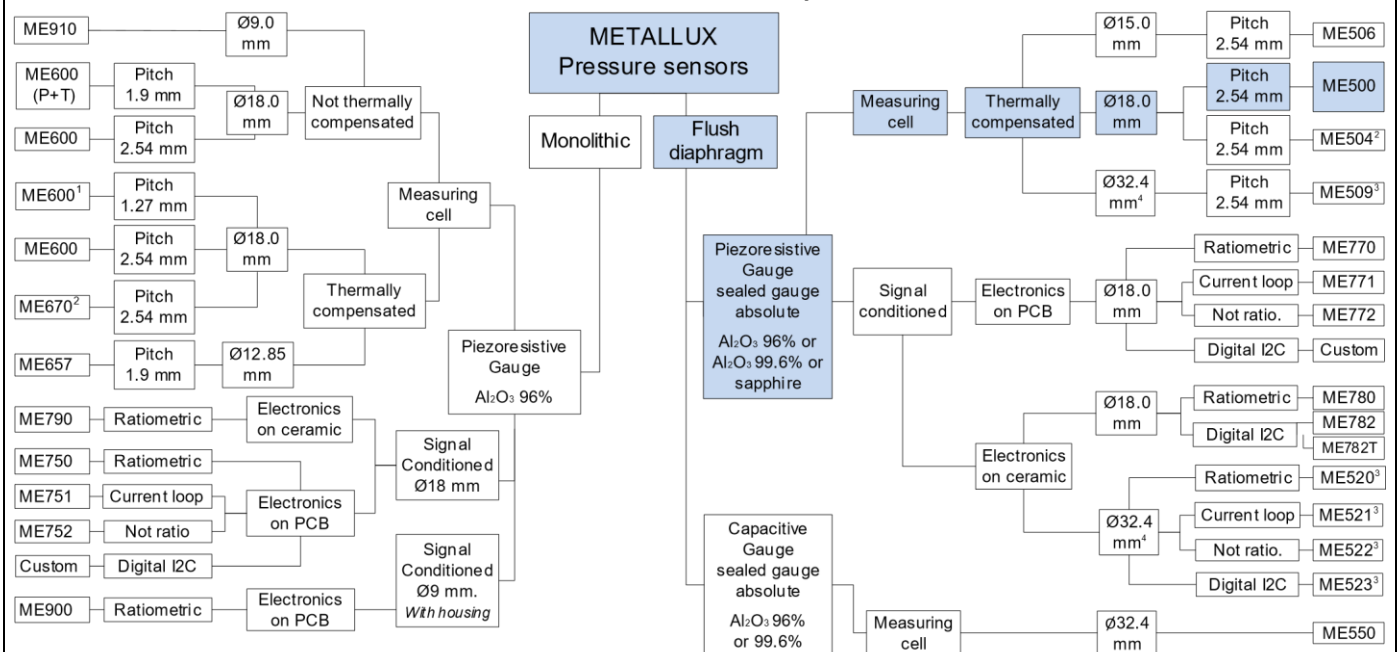
Thermally compensated

Extended customization

Extended choice of measuring ranges



Pressure sensors family tree



¹ Also available in not thermally compensated version

³ Not available with sapphire diaphragm.

Technical characteristics

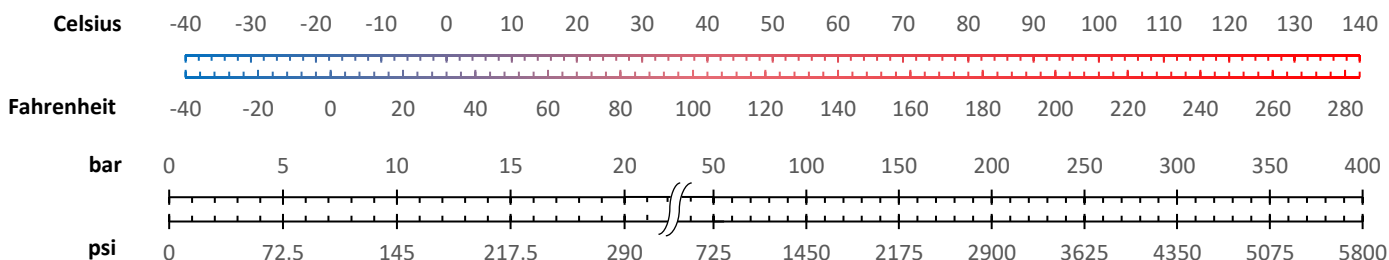
Parameters	Units	Description
Sensor type	-	Flush diaphragm, absolute (A), gauge (R) or sealed gauge (S)
Technology	-	Piezoresistive
Diaphragm material	-	Ceramic Al ₂ O ₃ 96% (standard), 99.6% or sapphire (on request)
Weight	g	≤ 8 (ceramic cell only)
Response time	ms	≤ 1
Supply voltage	VDC	2...30
Offset	mV/V	- 0.1 ± 0.1 (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

ME500													
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	15	25	65	120	200	500	650	950	1250
	psi ¹	29	43	87	217	362	942	1740	2900	7250	9425	13775	18125
Vacuum capability	bar	-0.3	-0.8	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
	psi ¹	-4.3	-11	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14
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
Total thickness	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
	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	3.1...5.5	2.4...4.0	4.0...6.0	2.7...4.2	2.4...3.9	3.1...4.8	3.1...4.8	2.0...3.5
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	± 0.02 / ± 0.06 +25 °C...+85 °C (+77 °F...+185 °F) ± 0.05 / ± 0.15 -40 °C...+25 °C (-40 °F...+77 °F) / +85 °C...+135 °C (+185 °F...+275 °F) Not compensated ± 0.005 / ± 0.02 ⁵ +25 °C...+85 °C (+77 °F...+185 °F) ± 0.03 / ± 0.06 -40 °C...+25 °C (-40 °F...+77 °F) / +85 °C...+135 °C (+185 °F...+275 °F) Compensated											
Thermal span shift	%FS/K	Min. Typ. Max. - 0.030 -0.016 0 -0.040 -0.020 0 (for FSO ≤2bar) -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											

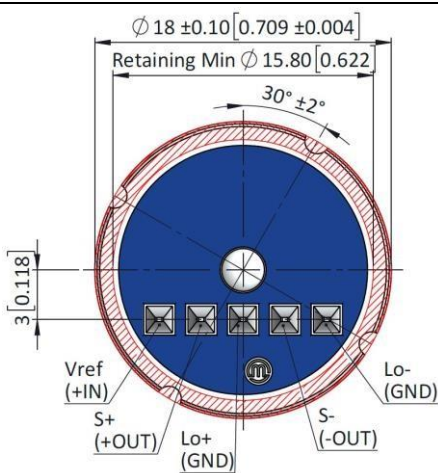
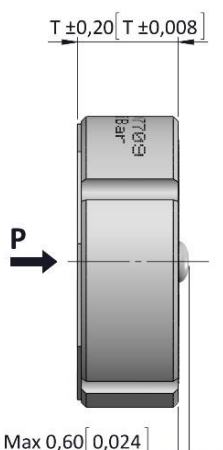
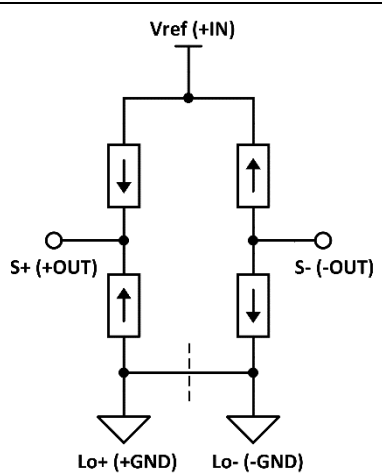
Tests performed at 25°C in Metallux housings, unless otherwise specified. Different housings may affect performances.

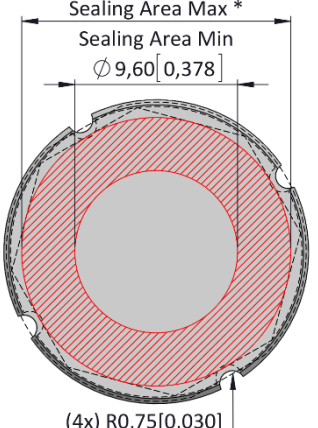
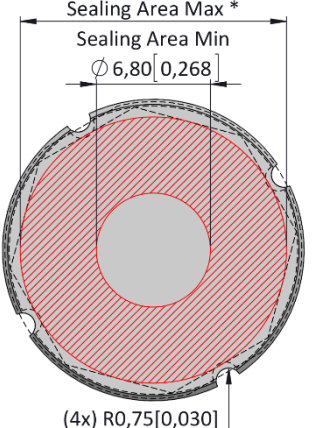
1. Psi values for reference only.
2. The sensitivity of each production batch is constant, within the indicated range and with minimal dispersion.
3. Accuracy = $\sqrt{\text{NonLinearity}^2 + \text{Hysteresis}^2 + \text{NonRepeatability}^2}$, terminal based.
4. All technical characteristics will remain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

Conversion tools

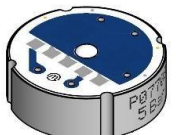
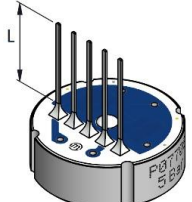
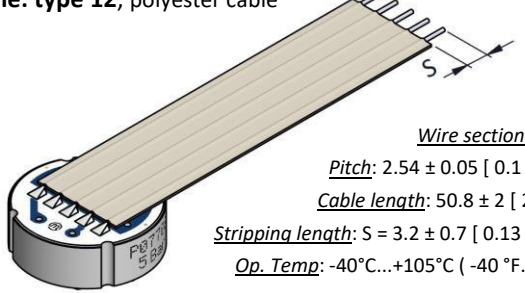


Mechanical drawings and electrical schematics

Top View	Side View	Schematics
 (5x) Pads 1,6x1,6 [0,063x0,063] Pitch=2,54 [0,1]	 T = sensor total thickness (see pag.2)	

ME500 ≤ Bottom View	ME500 ≥ 100bar Bottom View												
 <table border="1"> <thead> <tr> <th colspan="2">*Sealing area max.</th></tr> </thead> <tbody> <tr> <td>Round</td><td>Ø 15,7 [0,618]</td></tr> <tr> <td>Octagonal</td><td>Ø 14,7 [0,579]</td></tr> </tbody> </table> <u>Diaphragm shape:</u> <u>ROUND</u> 0.5 bar - 7 psi 1 bar - 14 psi 2 bar - 29 psi <u>OCTAGONAL</u> 5 bar - 72psi 10 bar - 145 psi 20 bar - 290 psi 50 bar - 720 psi	*Sealing area max.		Round	Ø 15,7 [0,618]	Octagonal	Ø 14,7 [0,579]	 <table border="1"> <thead> <tr> <th colspan="2">*Sealing area max.</th></tr> </thead> <tbody> <tr> <td>Round</td><td>Ø 15,7 [0,618]</td></tr> <tr> <td>Octagonal</td><td>Ø 14,7 [0,579]</td></tr> </tbody> </table> <u>Diaphragm shape:</u> <u>OCTAGONAL</u> 100 bar - 1450 psi 200 bar - 2900 psi 400 bar - 5800 psi <u>ROUND</u> 600 bar - 8700 psi 800 bar - 11600 psi	*Sealing area max.		Round	Ø 15,7 [0,618]	Octagonal	Ø 14,7 [0,579]
*Sealing area max.													
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Octagonal	Ø 14,7 [0,579]												
All quotes are in mm [inch] – General tolerance ISO 2768-1 M													

Electrical terminations

Example: type 09, pre-tinned soldering pads  <u>Pitch:</u> 2.54 ± 0.05 [0.1 ± 0.002] <u>Max. tin thickness:</u> 0.4 [0.016] <u>Op. Temp:</u> -40°C...+135°C (-40 °F...275 °F)	Example: type 01, 5 pins L = 13.0 ± 0.5 [0.51 ± 0.02]  <u>Pitch:</u> 2.54 ± 0.05 [0.1 ± 0.002] <u>Pin section:</u> 0.51 x 0.25 [0.02 x 0.01] <u>Pin length:</u> L = 13.0 ± 0.5 [0.51 ± 0.02] <u>Op. Temp:</u> -40°C...+135°C (-40 °F...275 °F)
Example: type 12, polyester cable  <u>Wire section:</u> AWG24 <u>Pitch:</u> 2.54 ± 0.05 [0.1 ± 0.002] <u>Cable length:</u> 50.8 ± 2 [2 ± 0.08] <u>Stripping length:</u> S = 3.2 ± 0.7 [0.13 ± 0.028] <u>Op. Temp:</u> -40°C...+105°C (-40 °F...221 °F)	Other types available Type 02 : 5 pins L = 9 ± 0.5 [0.51 ± 0.02] Type 03 or 05 : 4 pins L = 13 ± 0.5 (without LO (-) or Lo (+)) Type 04 or 06 : 4 pins L = 9 ± 0.5 (without LO (-) or Lo(+)) Type 07 : 5 pins L = 13 ± 0.5 [0.51 ± 0.02] – open bridge Type 08 : 5 pins L = 9 ± 0.5 [0.35 ± 0.02] – open bridge Type 10 : NOMEX™ cable, 50.8 mm, Op. Temp: -40°C...+125°C Type 11 : PVC cable, 50.8 mm, Op. Temp: -20°C...+105°C
All quotes are in mm [inch] – General tolerance ISO 2768-1 M	

Ordering code

	ME500	-	---	-	-	--	-
Sensor type	Absolute	A					
	Gauge	R					
	Sealed Gauge	S					
Pressure range	0...0.5 bar [0...7 psi] (-/R/-)	0p5					
	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)	xxx					
Offset	-0.1 ±0.1 mV/V [negative]	N					
	0.0 ±0.1 mV/V [zero]	Z					
	+0.1 ±0.1 mV/V [positive]	P					
	Others on request (please specify)	X					
Thermal offset shift adjustment	≤ ± 0.06 % FS/K (not thermally compensated)	6					
	≤ ± 0.04 % FS/K	4					
	≤ ± 0.02 % FS/K	2					
	Others on request (please specify)	x					
Termination type	5 pins 13 mm ± 0.5 mm, pitch 2.54 mm	01					
	5 pins 9 mm ± 0.5 mm, pitch 2.54 mm	02					
	4 pins 13 mm ± 0.5 mm, pitch 2.54 mm – without LO (-)	03					
	4 pins 9 mm ± 0.5 mm, pitch 2.54 mm – without LO (-)	04					
	4 pins 13 mm ± 0.5 mm, pitch 2.54 mm – without LO (+)	05					
	4 pins 9 mm ± 0.5 mm, pitch 2.54 mm – without LO (+)	06					
	5 pins 13 mm ± 0.5 mm, pitch 2.54 mm – open bridge	07					
	5 pins 9 mm ± 0.5 mm, pitch 2.54 mm – open bridge	08					
	5 pre-tinned soldering pads, pitch 2.54 mm	09					
	NOMEX™ cable 50.8 mm – 5 wires, pitch 2.54 mm	10					
	PVC flat cable 50.8 mm – 5 wires, pitch 1.27 mm	11					
	Polyester cable 50.8 mm – 5 wires, pitch 2.54 mm	12					
	Others on request (please specify)	xx					
Additional coating	Without	0					
	Others on request (please specify)	x					