



ME506 datasheet

FLUSH DIAPHRAGM, PIEZORESISTIVE CERAMIC PRESSURE SENSOR

Metallux ME506 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.

Metallux ME506 pressure sensor main feature is the reduced diameter (15 mm).

Metallux ME506 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.

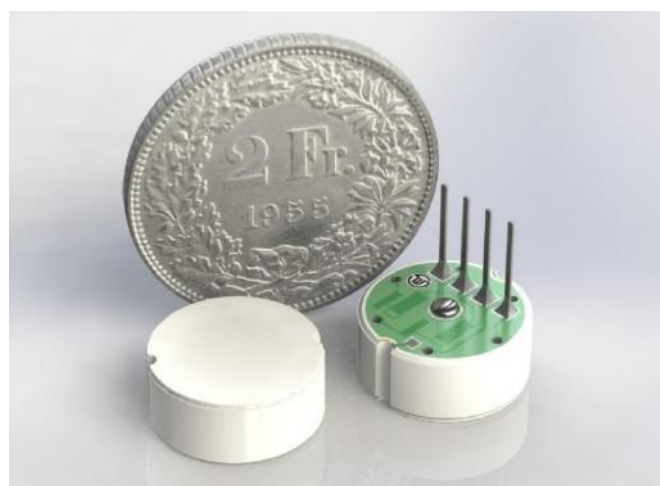
FEATURES

Excellent resistance to corrosion and abrasion

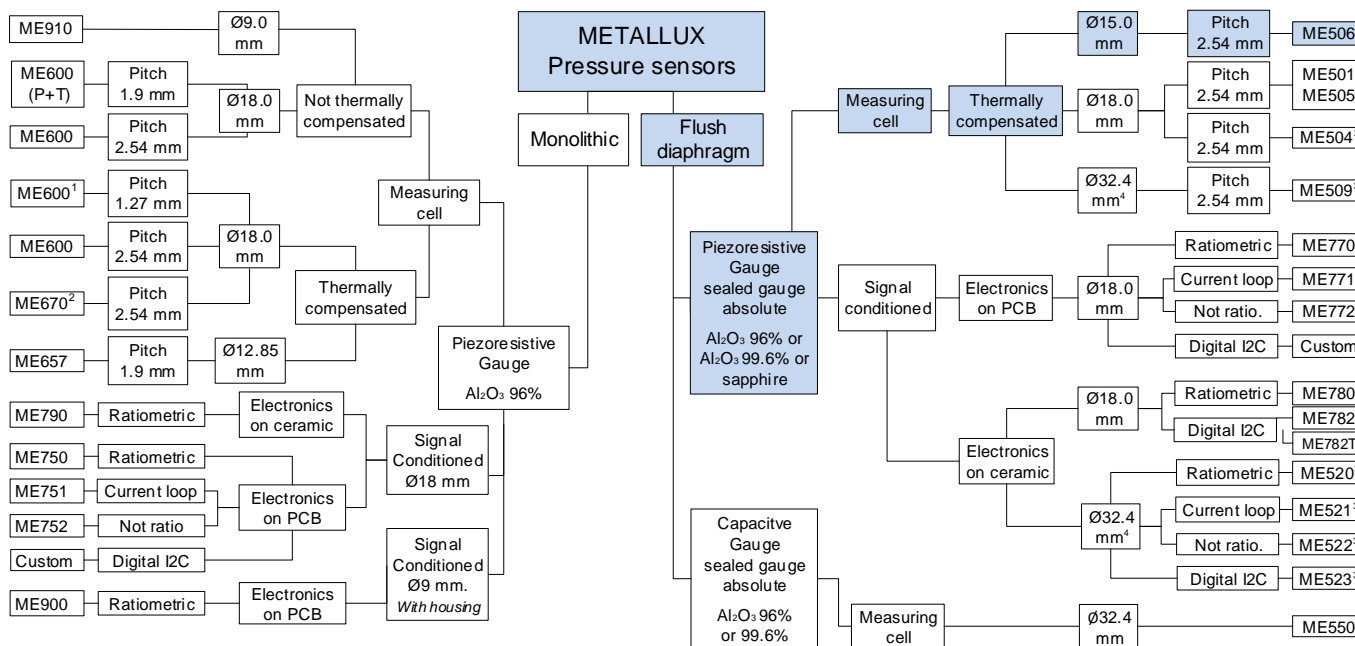
Small diameter

Absolute measurement available

Thermally compensated



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

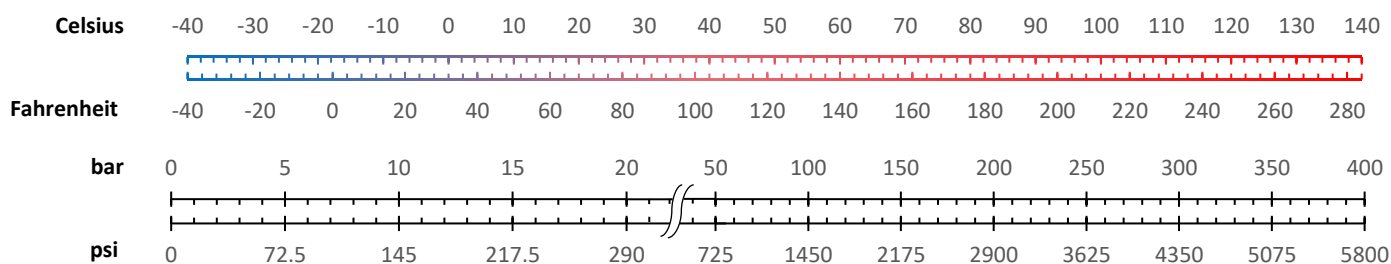
Parameters	Units	Description
Sensor type	-	Flush diaphragm, absolute (A), gauge (R) or sealed gauge (S)
Technology	-	Piezoresistive
Diaphragm material	-	Ceramic Al ₂ O ₃ 96% (standard), 99.6% or sapphire (on request)
Weight	g	≤ 8 (ceramic cell only)
Response time	ms	≤ 1
Supply voltage	VDC	2...30
Offset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

Nominal pressure	bar	1	2	5	10	20	50	
	psi ¹	14	29	73	145	290	725	
Overload pressure	bar	2	4	10	15	35	100	
	psi ¹	29	58	145	217	507	1450	
Burst pressure	bar	3	6	12	20	50	120	
	psi ¹	43	87	174	290	725	1740	
Vacuum capability	bar	-0.5	-0.5	-1	-1	-1	-1	
	psi ¹	-7	-7	-14	-14	-14	-14	
Pressure type	-	A / R / S	A / R / S	A / R / S	A / R / S	A / R / S	A / R / S	
Total thickness	mm	6.12	6.17	6.25	6.30	6.50	6.70	
Sensitivity ²	mV/V	1.8...3.6	1.9...3.5	2.2...4.0	3.2...5.8	2.2...4.0	4.0...6.0	
Accuracy ³ (typ./max.)	%FS	0.3 / 0.9	0.3 / 0.6	0.2 / 0.4	0.2 / 0.5	0.2 / 0.5	0.2 / 0.5	
Thermal offset shift (typ./max.)	%FS/K	± 0.02 / ± 0.06 +25 °C...+85 °C (+77 °F...+185 °F)					Not compensated	
		± 0.05 / ± 0.15 -40 °C...+25 °C (-40 °F...+77 °F) / +85 °C...+135 °C (+185 °F...+275 °F)					Compensated	
Thermal span shift	%FS/K	± 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)						
Thermal span shift	%FS/K	Min.	Typ.	Max.				
		-0.030	-0.016	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			

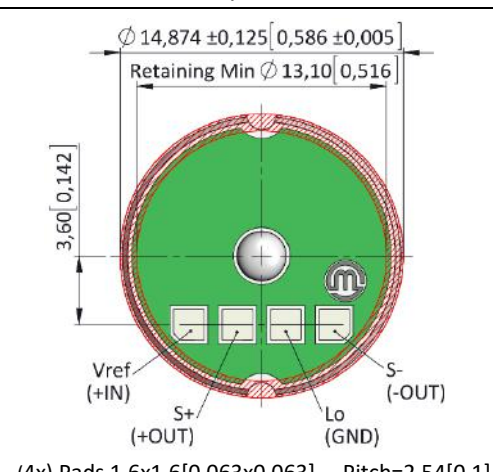
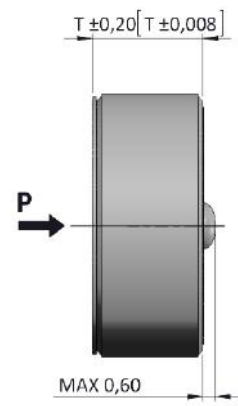
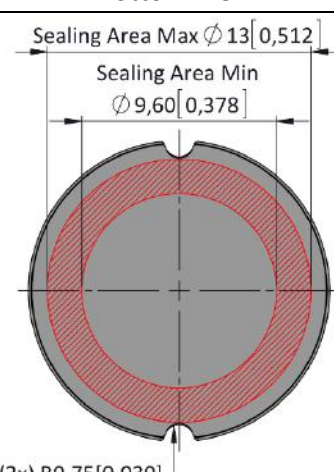
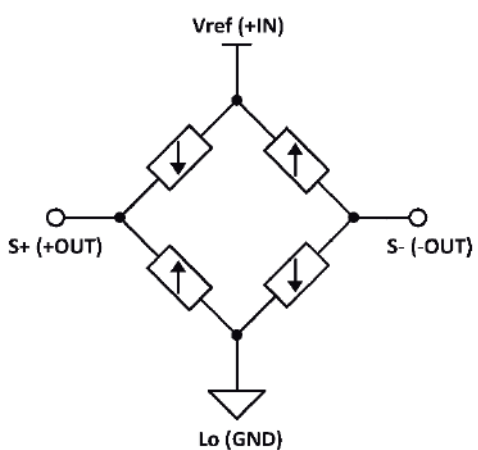
Tests performed at 25 °C in Metallux housings, unless otherwise specified. Different housings may affect performances.

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.
5. See Ordering Code for compensation level


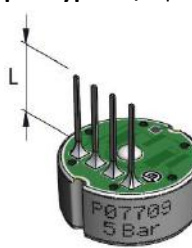
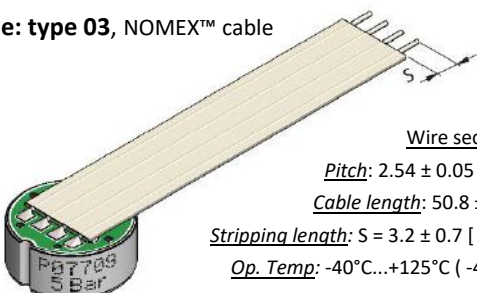
Conversion tools



Mechanical drawings and electrical schematics

<p style="text-align: center;">Top View</p>  <p style="text-align: center;">(4x) Pads 1,6x1,6[0,063x0,063] Pitch=2,54[0,1]</p>	<p style="text-align: center;">Side View</p>  <p style="text-align: center;">T = sensor total thickness (see pag.2)</p>
<p style="text-align: center;">Bottom View</p>  <p style="text-align: center;">(2x) R0,75[0,030]</p>	<p style="text-align: center;">Schematics</p> 
<p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p>	

Electrical terminations

<p>Example: type 02, pre-tinned soldering pads</p>  <p style="text-align: right;"> <i>Pitch:</i> 2.54 ± 0.05 [0.1 ± 0.002] <i>Maximum tin thickness:</i> 0.3 [0.0 1] <i>Op. Temp:</i> -40°C...+135°C (-40 °F...275 °F) </p>	<p>Example: type 01, 4 pins L = 13 ± 0.5 [0.39 ± 0.02]</p>  <p style="text-align: right;"> <i>Pitch:</i> 2.54 ± 0.05 [0.1 ± 0.002] <i>Pin section:</i> 0.51 x 0.25 [0.02 x 0.01] <i>Pin length:</i> L = 13.0 ± 0.5 [0.51 ± 0.02] <i>Op. Temp:</i> -40°C...+135°C (-40 °F...275 °F) </p>
<p>Example: type 03, NOMEX™ cable</p>  <p style="text-align: right;"> <i>Wire section:</i> AWG 26 <i>Pitch:</i> 2.54 ± 0.05 [0.1 ± 0.002] <i>Cable length:</i> 50.8 ± 2 [2 ± 0.08] <i>Stripping length:</i> S = 3.2 ± 0.7 [0.13 ± 0.028] <i>Op. Temp:</i> -40°C...+125°C (-40 °F...257 °F) </p>	<p>Other types available</p> <p>Type 04, PVC flat cable, 50.8 mm, Op. Temp: -20°C...+105°C</p> <p>Type 99, customization on request</p>
<p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p>	

Ordering code

	ME506	-	---	-	-	-
Sensor type	Absolute	A				
	Relative	R				
	Sealed Gauge	S				
Pressure range	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			
	Others on request (please specify)		999			
Thermal offset shift adjustment	≤ ± 0.06 % FS/K (not thermally compensated)			0		
	≤ ± 0.04 % FS/K			1		
	≤ ± 0.02 % FS/K			2		
	Others on request (please specify)			9		
Termination type	4 pins 13 mm ± 0.5 mm				01	
	4 pre-tinned soldering pads				02	
	NOMEX™ cable 50.8 mm – 4 wires, pitch 2.54 mm				03	
	PVC flat cable 50.8 mm – 4 wires, pitch 1.27 mm				04	
	Others on request (please specify)				99	
Additional coating	Without					1
	Parylene coating					2
	Others on request (please specify)					9



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