



METALLUX

Swiss technology at your service

ME657 datasheet

MONOLITHIC PIEZORESISTIVE CERAMIC PRESSURE SENSOR

Metallux ME657 monolithic pressure sensors are made with a ceramic cell and work following the piezoresistive principle. Metallux ME657 sensors are thermally compensated by laser-adjustable PTC resistors and offset can be adjusted following customers' specification. The Wheatstone bridge is screen printed directly on one side of the ceramic diaphragm by means of Thick Film technology.

The diaphragm 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.

ME657 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.

Metallux ME657 pressure sensor main feature is the reduced diameter (12.85 mm)

FEATURES

Excellent resistance to corrosion and abrasion

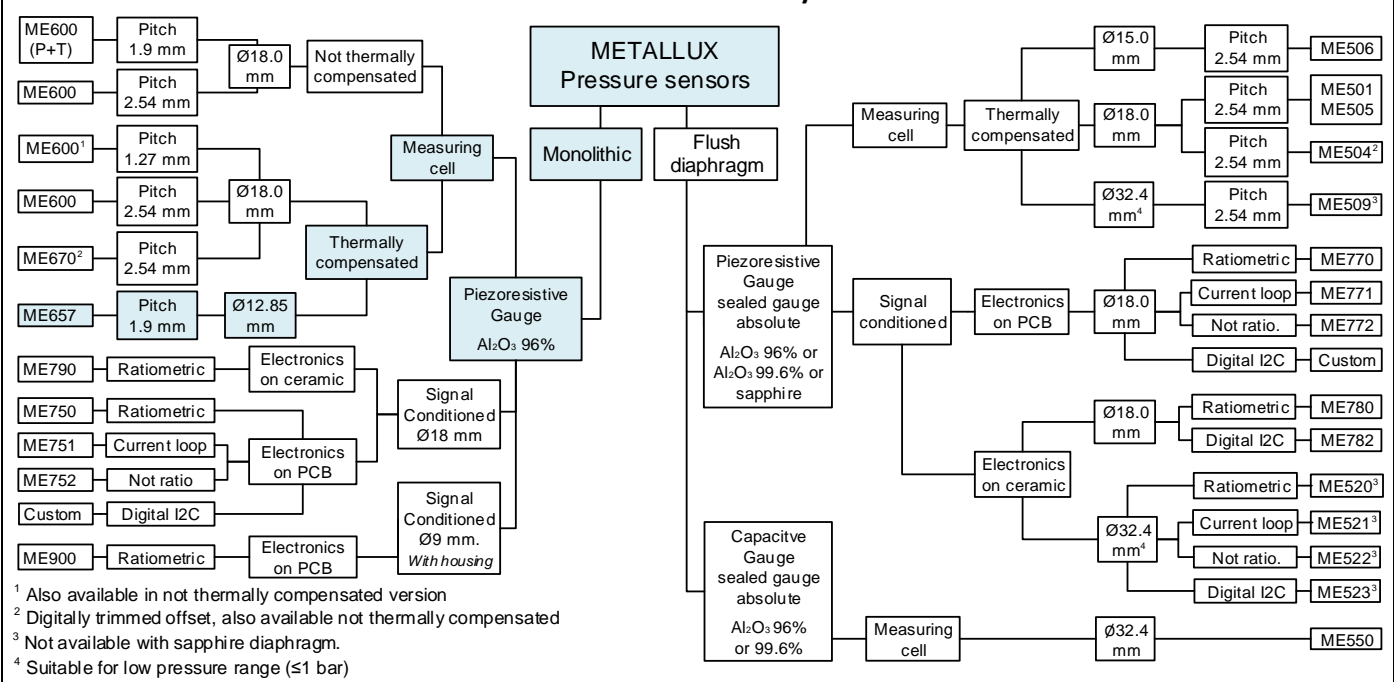
Small diameter

Thermally compensated

Easy 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

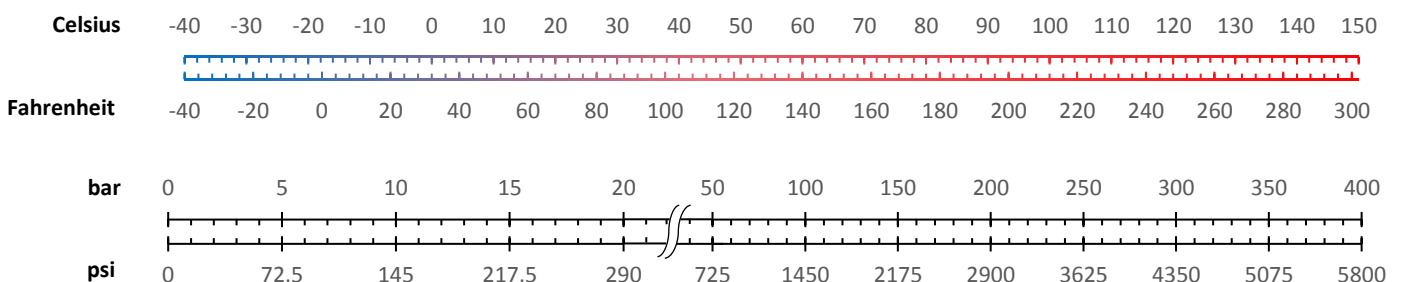
Parameters	Units	Description
Sensor type	-	Monolithic, gauge
Technology	-	Piezoresistive
Material	-	Ceramic Al ₂ O ₃ 96%
Weight	g	≤ 3 (ceramic cell only)
Response time	ms	≤ 1
Supply voltage range	VDC	2...30
Offset	mV/V	- 0.1 ± 0.1 (Other nominal values available on request)
Current consumption	mA	≤ 1.3 @ 10V
Operating temperature	°C	-40 ...+135 (-40 °F...+275 °F)
Storage temperature	°C	-40...+150 (-40 °F...+302 °F)
Bridge impedance	kΩ	11 ± 30%
Compliant with	-	REACH, RoHS, Conflict Minerals free

Nominal pressure FSO	bar	350
	psi ¹	5000
Overload pressure	bar	450
	psi ¹	6500
Burst pressure	bar	600
	psi ¹	8700
Vacuum capability	bar	-1
	psi ¹	-14
Sensitivity ²	mV/V	1.5...3.5
Accuracy ³ (typ./max.)	%FS	0.6 / 1.2
Thermal offset shift (typ./max.)	%FS/K	± 0.005 / ± 0.020 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

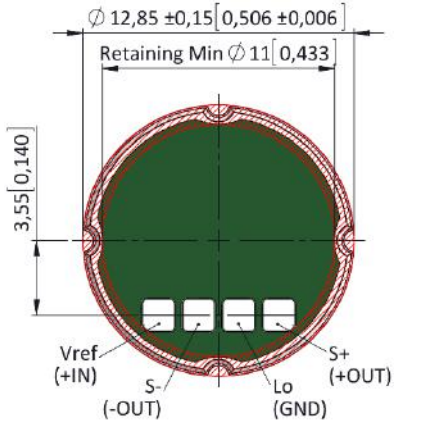
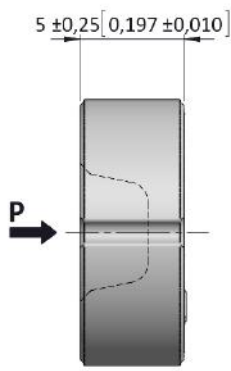
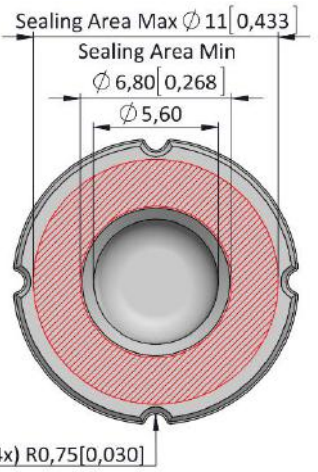
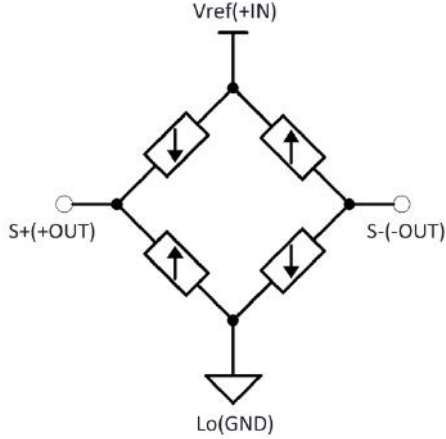
All tests above are performed at 25°C in Metallux housings, unless otherwise specified. Different housings may affect performances.

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.


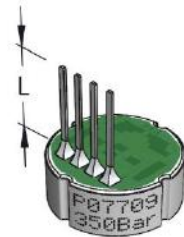
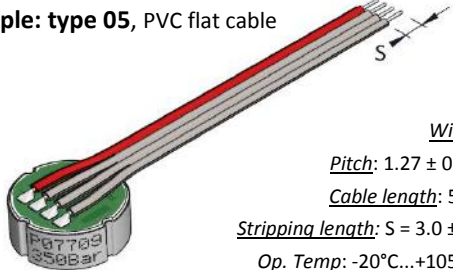
Conversion tools



Mechanical drawings and electrical schematics

<p style="text-align: center;">Top View</p>  <p style="text-align: center;">(4x) Pads 1,6x1,6 [0,063x0,063] Pitch=1,9 [0,075]</p>	<p style="text-align: center;">Side View</p>  <p style="text-align: center;">For internal sealing, please consult our mounting proposal documents</p>
<p style="text-align: center;">Bottom View</p>  <p style="text-align: center;">(4x) 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> 1.9 ± 0.05 [0.75 ± 0.002] <i>Maximum tin thickness:</i> 0.3 [0.012] <i>Operating temperature:</i> -40°C...+135°C </p>	<p>Example: type 01, 4 pins L = 9.0 ± 0.5 [0.35 ± 0.02]</p>  <p style="text-align: right;"> <i>Pitch:</i> 1.9 ± 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 = 9.0 ± 0.5 [0.35 ± 0.02] <i>Op. Temp.:</i> -40°C...+135°C (-40 °F...275 °F) </p>
<p>Example: type 05, PVC flat cable</p>  <p style="text-align: right;"> <i>Wire section:</i> AWG26 <i>Pitch:</i> 1.27 ± 0.05 [0.05 ± 0.002] <i>Cable length:</i> 50.8 ± 2 [2 ± 0.08] <i>Stripping length:</i> S = 3.0 ± 0.5 [0.12 ± 0.02] <i>Op. Temp.:</i> -20°C...+105°C (-4 °F...221 °F) </p>	<p>Other types available</p> <p>Type 04, NOMEX™ cable, 50.8 mm, Op. Temp: -40°C...+135°C Type 09, polyester cable, 50.8 mm, Op. Temp: -20°C...+105°C Type 99, customization on request</p>
<p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p>	

Ordering code

	ME657	----	-	-	--	-
Pressure range	0...350 bar [0...5800 psi]	350				
Sensitivity adjustment	Without	0				
	On request	9				
Thermal offset shift adjustment	$\leq \pm 0.01$ %FS/K	0				
	$\leq \pm 0.02$ %FS/K	1				
	$\leq \pm 0.05$ %FS/K (not thermally compensated)	2				
Termination type	4 pins 9 ± 0.5 mm, pitch 1.90 mm				01	
	4 pre-tinned soldering pads, pitch 1.90 mm				02	
	NOMEX™ cable 50.8 mm - 4 wires, pitch 1.90 mm				04	
	PVC flat cable 50.8 mm - 4 wires, pitch 1.27 mm				05	
	Polyester cable 50.8 mm - 4 wires, pitch 1.90 mm				09	
	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)