



Swiss technology at your service

Metallux ME651 monolithic pressure sensors are made with a ceramic cell and work following the piezoresistive principle. The Wheatstone bridge is screen printed directly on one side of the ceramic diaphragm by means of Thick Film technology. Metallux ME651 sensors are thermally compensated by laser-adjustable PTC resistors.

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.

ME651 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

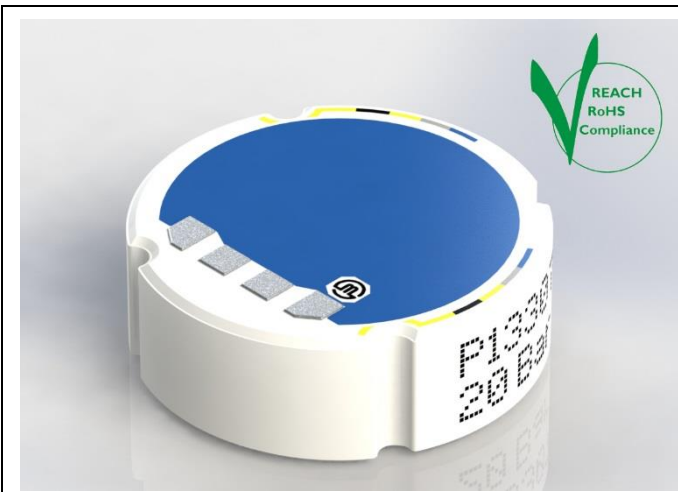
Excellent resistance to corrosion and abrasion

Wide choice of measuring ranges

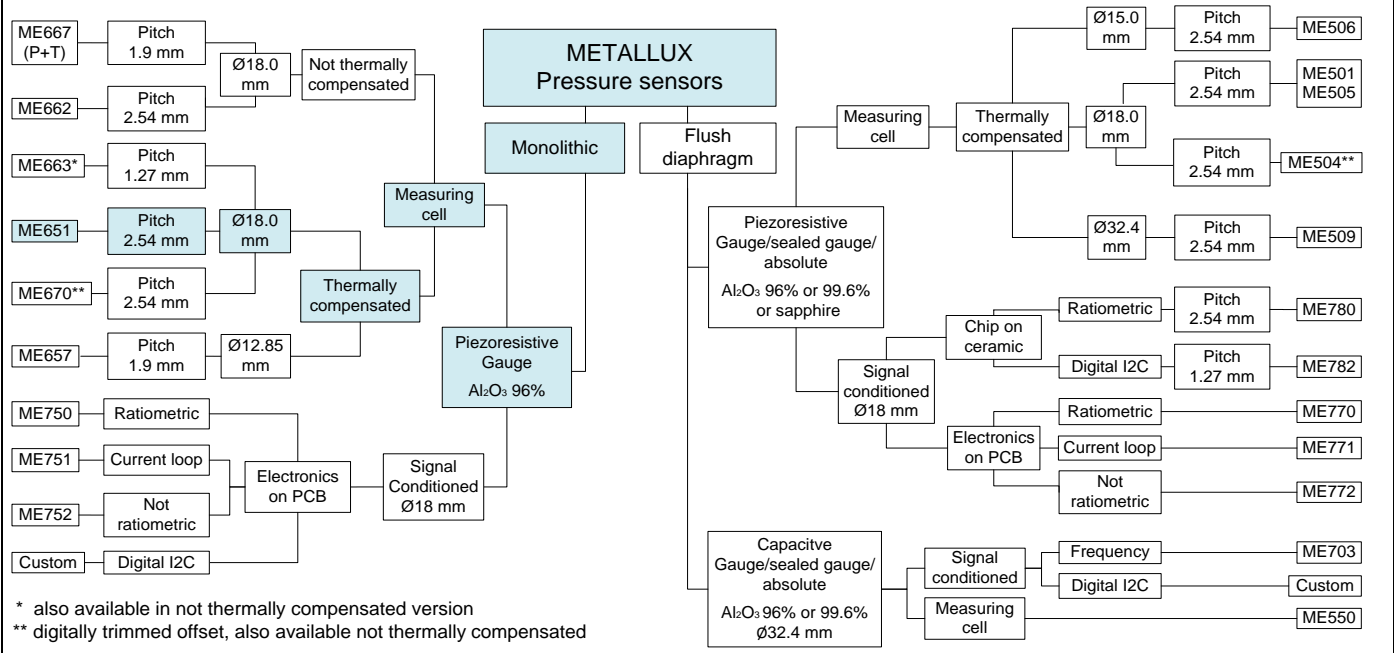
Easy mounting

Thermally compensated

Customizable



Pressure sensors family tree



Technical characteristics

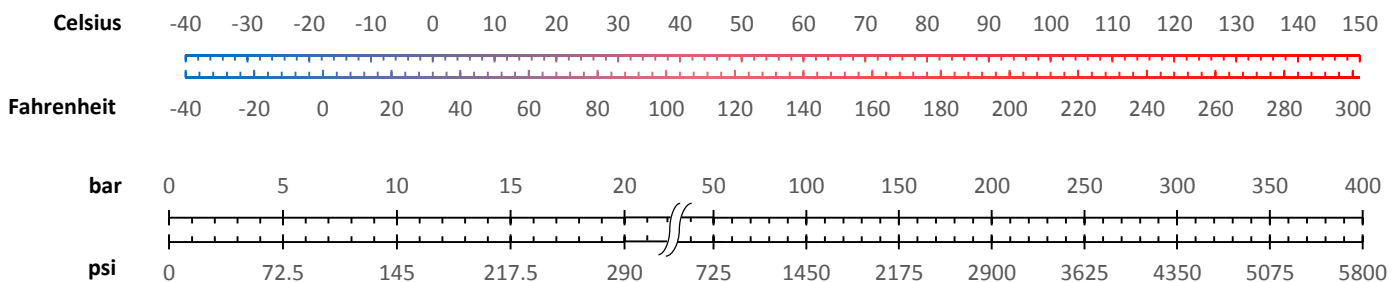
Parameters	Units	Description
Sensor type	-	Monolithic, gauge
Technology	-	Piezoresistive
Material	-	Ceramic Al ₂ O ₃ 96%
Weight	g	≤ 5 (ceramic cell only)
Response time	ms	≤ 1
Supply voltage range	VDC	2...30
Offset	mV/V	- 0.1 ± 0.1 (Other nominal values available on request)
Current consumption	mA	≤ 1.3 @ 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	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	-0.8	-0.9	-1	-1	-1	-1	-1	-1	-1	
	psi ¹	-11.6	-13.1	-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	0.15/0.35	0.15/0.30	0.15/0.30	0.15/0.30	0.25/0.60	0.5/1.0	0.5/1.0	0.5/1.0	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

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

<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;">For internal sealing, please refer to our mounting proposal</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;"> <u>Pitch:</u> 2.54 ± 0.05 [0.1 ± 0.002] <u>Maximum tin thickness:</u> 0.3 [0.01] <u>Op. Temp:</u> -40°C...+135°C (-40 °F...275 °F) </p>	<p>Example: type 31, 4 pins L = 9.0 ± 0.5 [0.35 ± 0.02]</p> <p style="text-align: right;"> <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 = 9.0 ± 0.5 [0.35 ± 0.02] <u>Op. Temp:</u> -40°C...+135°C (-40 °F...275 °F) </p>
<p>Example: type 09, polyester cable</p> <p style="text-align: right;"> <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) </p>	<p>Other types available</p> <p>Type 01, 4 pins L = 13 ± 0.5 [0.51 ± 0.02]</p> <p>Type 04, NOMEX™ cable, 50.8 mm, Op. Temp: -40°C...+135°C</p> <p>Type 05, 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

	ME651	---	-	-	---	-
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				
Sensitivity adjustment	Without		0			
	On request		9			
Thermal offset shift adjustment	$\leq \pm 0.02$ %FS/K			1		
	$\leq \pm 0.01$ %FS/K			2		
Termination type	4 Pins 13 ± 0.5 mm, pitch 2.54 mm				01	
	4 Pins 9 ± 0.5 mm, pitch 2.54 mm				31	
	4 pre-tinned soldering pads, pitch 2.54 mm				02	
	NOMEX™ cable 50.8 mm - 4 wires, pitch 2.54 mm				04	
	PVC flat cable 50.8 mm - 4 wires, pitch 1.27 mm				05	
	Polyester cable 50.8 mm - 4 wires, pitch 2.54 mm				09	
Others on request (please specify)					99	
Additional coating	Without					1
	Parylene coating					2
	Others on request (please specify)					9