

**METALLUX**

Swiss technology at your service

ME75x/MEP75x datasheet

MONOLITHIC PIEZORESISTIVE CERAMIC PRESSURE TRANSDUCER

Metallux ME75x and MEP75x are monolithic pressure sensors made with 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 and signal conditioning electronics are added to generate 0.5...4.5 V ratiometric output (ME750), current loop 4...20 mA (ME751) or 0...10 V non ratiometric output (ME752). Also available in customized version I²C output.

Pressure and temperature calibration are done electronically with the on-board ASIC and can be performed in bar (ME75x) or in psi (MEP75x). Electronics provide offset and span correction when temperature changes. Aging detection and compensation are constantly performed. This new method guarantees good precision and long-term stability.

The Metallux ME75x family meets EMI requirements. The ASIC stores production lot specific data for sensor traceability and allows custom calibration.

Due to the excellent chemical immunity of the the Al₂O₃ ceramic, the ME75x sensors are suitable for nearly all aggressive media.

FEATURES

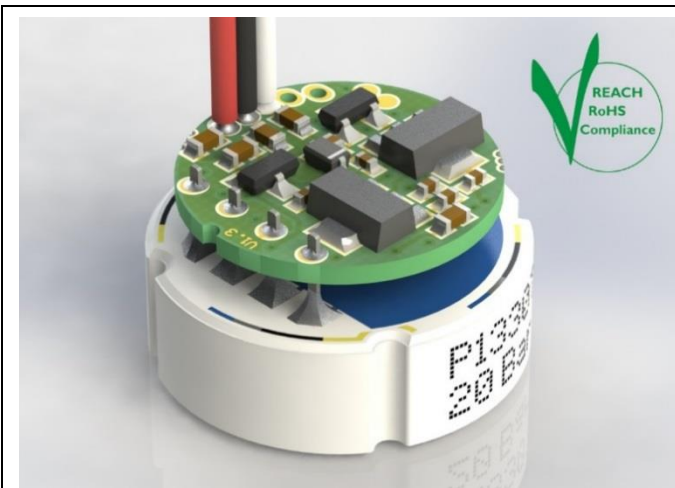
Excellent resistance to corrosion and abrasion

Signal conditioning

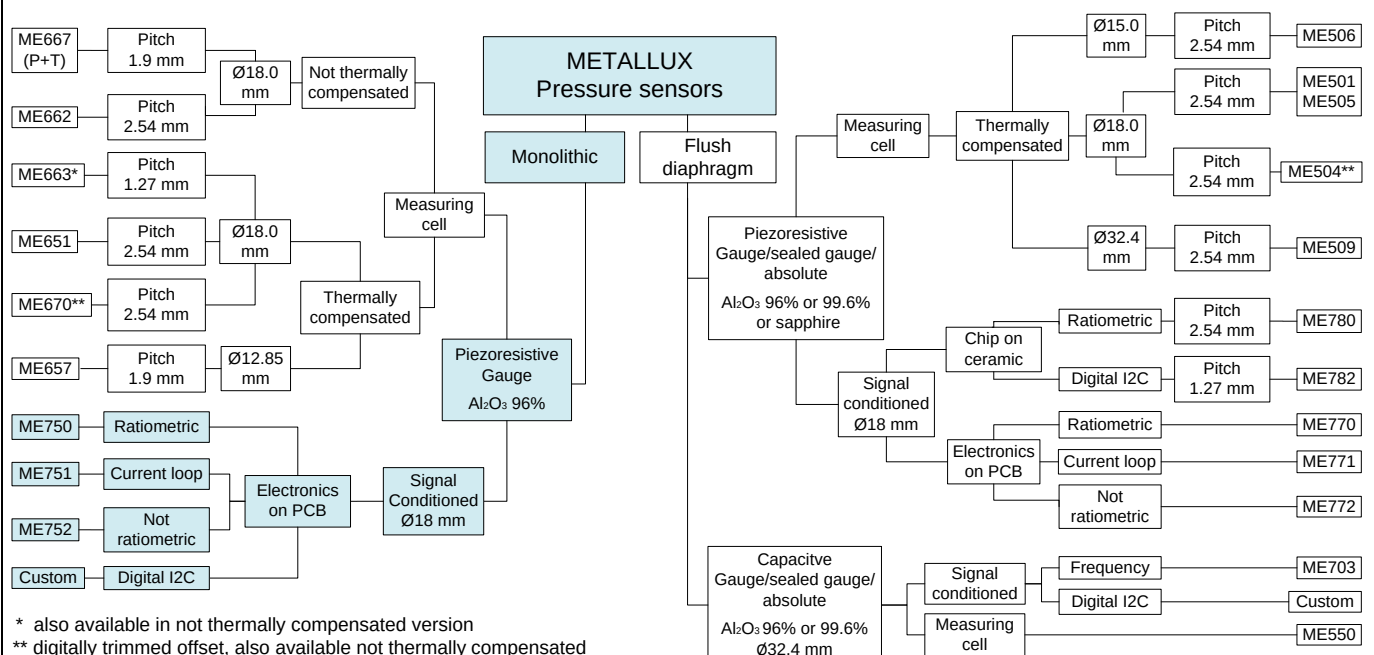
EMI certified

Thermally compensated

Zero stress mounting software



Pressure sensors family tree



Technical characteristics

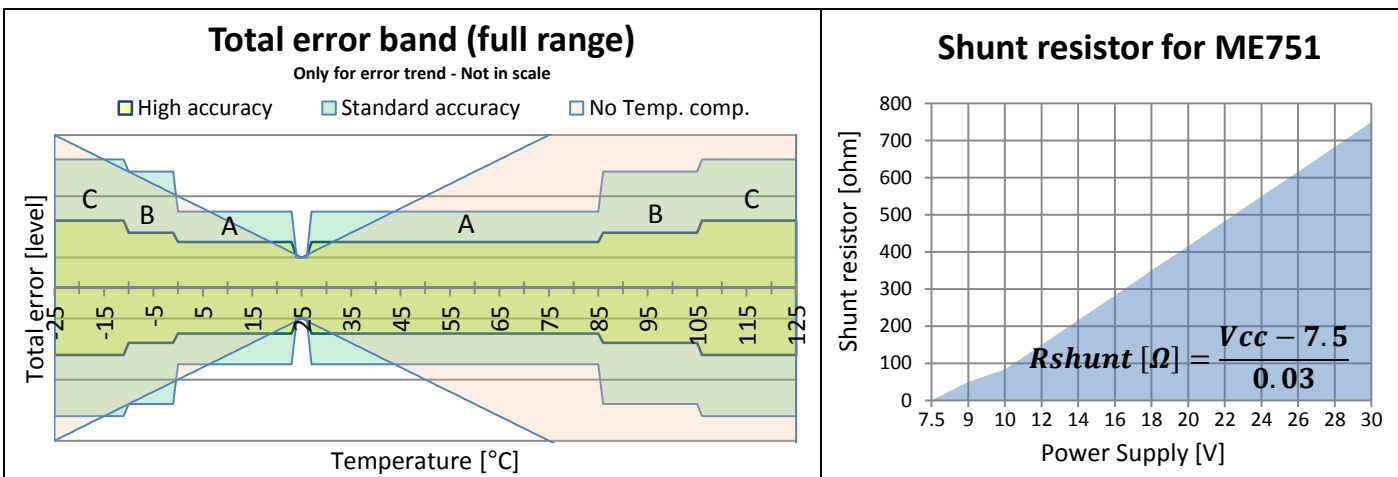
Parameters	Units	ME750 / MEP750	ME751 / MEP751	ME752 / MEP752
Output	-	Ratiometric	Current loop	Non ratiometric
Output range	-	0.5...4.5 [V]	4...20 [mA]	0...10 [V]
Sensor type	-	Monolithic, gauge		
Technology	-	Piezoresistive with electronic signal conditioning		
Material	-	Ceramic Al ₂ O ₃ 96%		
Weight	g	≤ 8 (with standard wires)		
Response time	ms	≤ 5		
Supply voltage	VDC	4.5...5.5	9...35	12...35
Max current ¹	mA	6 (R _{LOAD} ≥ 2 kΩ)	4...20	8 (R _{LOAD} ≥ 2 kΩ)
Operating temp.	°C	-25...+125 (-13 °F...+257 °F)		
Storage temp.	°C	-40...+135 (-40 °F...+275 °F)		
Compliant with	-	REACH, RoHS, Conflict Minerals free		
EMC / ESD	-	Radiated Electromagnetic field		IEC/EN 61000-4-3(2006)
		Electrical fast transient burst		IEC/EN 61000-4-4(2004)
		RF conducted disturbance		IEC/EN 61000-4-6(2006)

Pressure range			ME75x / MEP75x															
Nominal pressure ²	ME	bar	1.6	2	2.5	4	5	6	10	16	20	25	40	50	100	200	250	400
	MEP	psi ³	20	30	50	60	100	115	150	300	400	500	750	1000	1500	3000	4000	5000
Overload pressure		bar	4	4	10	10	10	10	20	40	40	40	100	100	150	300	375	500
		psi	58	58	145	145	145	145	290	580	580	580	1450	1450	2175	4350	5440	7250
Burst pressure		bar	8	8	20	20	20	20	35	60	60	60	140	140	300	400	500	650
		psi	116	116	290	290	290	290	507	870	870	870	2030	2030	4350	5800	7250	9425
Vacuum capability		bar	-0.8	-0.8	-0.9	-0.9	-0.9	-9	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
		psi	-11.6	-11.6	-13.1	-13.1	-13.1	-13.1	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5

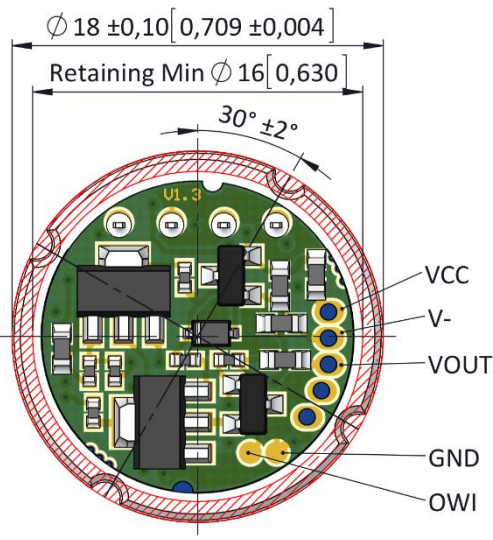
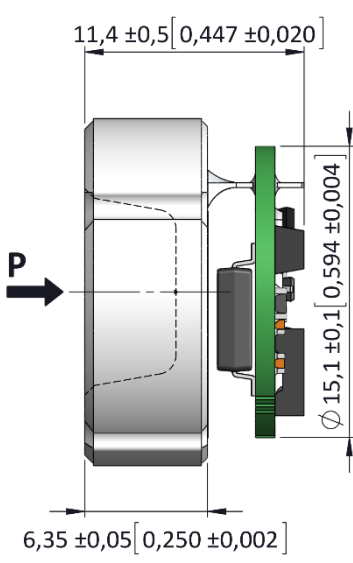
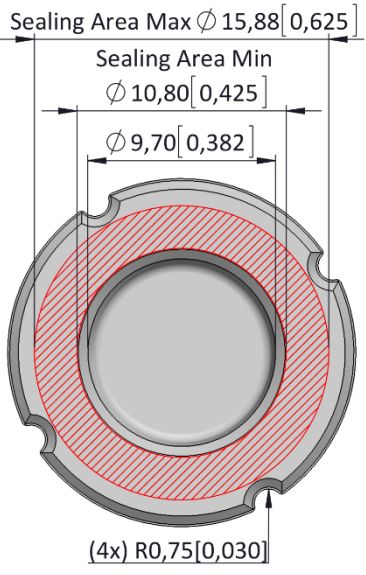
Accuracy ⁴ [%FS]	Calibration with high accuracy							
25°C (77 °F)	1.5	1.0					1.5	
A) 0...85°C (32...185 °F)	1.5		1.4		1.6	1.8	2.4	2.4
B)-10...105°C (14...221 °F)	1.8		1.7		1.8	2.2	2.6	2.6
C)-25...125°C (-13...257°F)	2.2		2		2.2	2.5	3.5	3.5
Accuracy ⁴ [%FS]	Calibration with standard accuracy							
25°C (77 °F)	1.5	1.0					1.5	
A) 0...85°C (32...185 °F)	2.5		2.4		2.6	2.8	3.4	3.4
B)-10...105°C (14...221 °F)	3.8		3.7		3.8	4.2	4.6	4.6
C)-25...125°C (-13...257°F)	4.2		4.0		4.2	5.5	5.5	5.5
Accuracy ⁴ [%FS]	Calibration without thermal compensation							
25°C (77 °F)	1.5	1.0					1.5	
-25...125 °C (-13...257°F)	Max ± 0.08 %FS/K (Ceramic cell thermal offset shift + thermal span shift) + Accuracy at 25°C							

Unless indicated, all data are based on a reference temperature of 25°C.

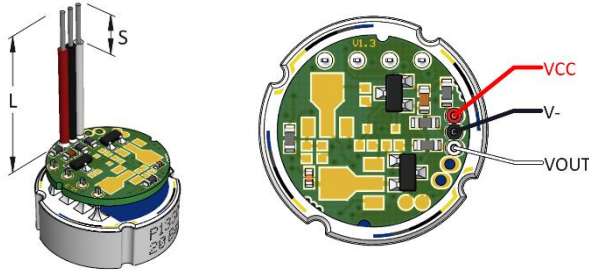
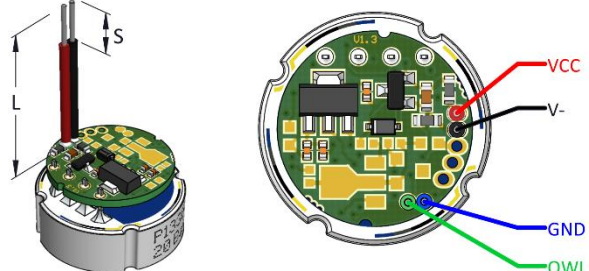
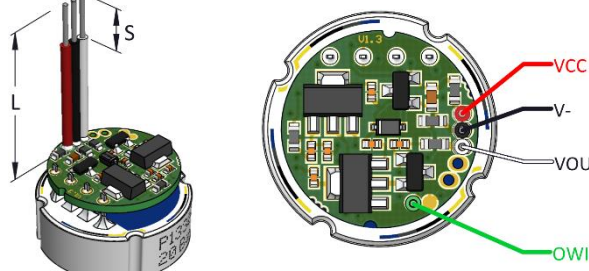
1. During calibration or auto-zero, current consumption is < 30 mA
2. Pressure ranges not shown specifically in the technical chart have performance of the nearest listed pressure range.
3. Psi values are not the exact conversion of bar value. Psi ranges are defined to cover different standard values.
4. Accuracy includes room temperature error of non-linearity, hysteresis and non-repeatability, offset and span deviation PLUS thermal span shift and thermal offset shift. Accuracy calculation is performed in Metallux housings; accuracy excludes temperature hysteresis which primarily depends on mechanical conditions (housing, o-ring, etc) of actual application.



Mechanical drawings

Top View	Side View	Bottom View
 $\varnothing 18 \pm 0,10 [0,709 \pm 0,004]$ Retaining Min $\varnothing 16 [0,630]$ $30^\circ \pm 2^\circ$ VCC V- VOUT GND OWI (3x) Pads $1,1 \times 1,4 [0,043 \times 0,055]$ (Vout, V-, VCC) (2x) Pads $1,1 \times 1,2 [0,043 \times 0,043]$ (OWI, GND)	 $11,4 \pm 0,5 [0,447 \pm 0,020]$ $15,1 \pm 0,1 [0,594 \pm 0,004]$ $6,35 \pm 0,05 [0,250 \pm 0,002]$	 Sealing Area Max $\varnothing 15,88 [0,625]$ Sealing Area Min $\varnothing 10,80 [0,425]$ $\varnothing 9,70 [0,382]$ (4x) $R0,75 [0,030]$ For internal sealing please refer to our mounting proposal
All quotes are in mm [inch] – General tolerance ISO 2768-1 M		

Electrical terminations

ME750 Example: type 0, Wires 50.8 mm		
	VCC : Power supply (red) V- : Ground (black) Vout*: Analog output (white)	<u>Wire section</u> : AWG 24 <u>Cable length</u>: $L = 50.8 \pm 2 [2 \pm 0.08]$ <u>Stripping length</u>: $S = 3.2 \pm 0.7 [0.13 \pm 0.028]$ <u>Operating temperature</u>: $-25^\circ\text{C} \dots +125^\circ\text{C}$
*programming through Vout wire		
ME751 Example: type 0, Wires 50.8 mm		
	VCC: Positive supply (red) V-: Negative supply (black) GND*: Digital ground (blue) OWI*: Program wire (green)	<u>Wire section</u> : AWG 24 <u>Cable length</u>: $L = 50.8 \pm 2 [2 \pm 0.08]$ <u>Stripping length</u>: $S = 3.2 \pm 0.7 [0.13 \pm 0.028]$ <u>Operating temperature</u>: $-25^\circ\text{C} \dots +125^\circ\text{C}$
*optional wires (termination type 2)		
ME752 Example: type 0, Wires 50.8 mm		
	VCC : Power supply (red) V- : Ground (black) Vout : Analog output (white) OWI*: Program wire (green)	<u>Wire section</u> : AWG 24 <u>Cable length</u>: $L = 50.8 \pm 2 [2 \pm 0.08]$ <u>Stripping length</u>: $S = 3.2 \pm 0.7 [0.13 \pm 0.028]$ <u>Operating temperature</u>: $-25^\circ\text{C} \dots +125^\circ\text{C}$
*optional wire (termination type 2)		
All quotes are in mm [inch] – General tolerance ISO 2768-1 M		

Ordering code

			ME	-	75	-	---	-	-	-
Pressure unit										
	bar blank									
	psi P									
Output signal										
	Ratiometric		0.5...4.5 [V]		0					
	Current loop		4...20 [mA]		1					
	Non ratiometric		0...10 [V]		2					
Pressure range										
	ME		MEP		ME – MEP					
	0...1.6 bar		or	0...20 psi		1p6 – 020				
	0...2 bar		or	0...30 psi		002 – 030				
	0...2.5 bar		or	0...50 psi		2p5 – 050				
	0...4 bar		or	0...60 psi		004 – 060				
	0...5 bar		or	0...100 psi		005 – 100				
	0...6 bar		or	0...115 psi		006 – 115				
	0...10 bar		or	0...150 psi		010 – 150				
	0...16 bar		or	0...300 psi		016 – 300				
	0...20 bar		or	0...400 psi		020 – 400				
	0...25 bar		or	0...500 psi		025 – 500				
	0...40 bar		or	0...750 psi		040 – 750				
	0...50 bar		or	0...1000 psi		050 – 1k0				
	0...100 bar		or	0...1500 psi		100 – 1k5				
	0...200 bar		or	0...3000 psi		200 – 3k0				
	0...250 bar		or	0...4000 psi		250 – 4k0				
	0...400 bar		or	0...5000 psi		400 – 5k0				
	Others on request (please specify)				999 – 999					
Calibration										
	High accuracy						0			
	Standard accuracy						1			
	No temperature compensation (calibration done at room temperature)						2			
	Not calibrated, not compensated (electrical test only)						3			
	Others on request (please specify)						9			
Termination type										
	Wires 50.8 mm						0			
	Pre-tinned soldering pads						1			
	Wires 50.8 mm+ program wires (only current loop and non ratiometric)						2			
	Others on request (please specify)						9			
Additional coating										
	Without								0	
	Parylene coating								1	
	Others on request (please specify)								9	

Conversion tools

