



Metallux ME790 and MEP790 pressure sensors are made with a monolithic ceramic cell and work following the piezoresistive principle. The Wheatstone bridge is screen printed directly on one side of the ceramic cell by means of Thick Film technology and signal conditioning electronics generate 0.5...4.5 V ratiometric output. Pressure and temperature calibration are done electronically with the on-board ASIC and can be performed in bar (ME790) or in psi (MEP790).

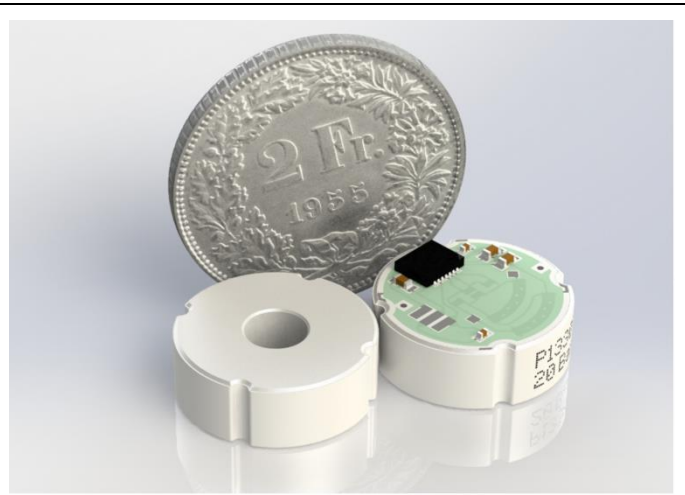
Electronics provides offset and span correction when the temperature changes.

Aging detection is constantly performed. This new method guarantees good precision and long-term stability.

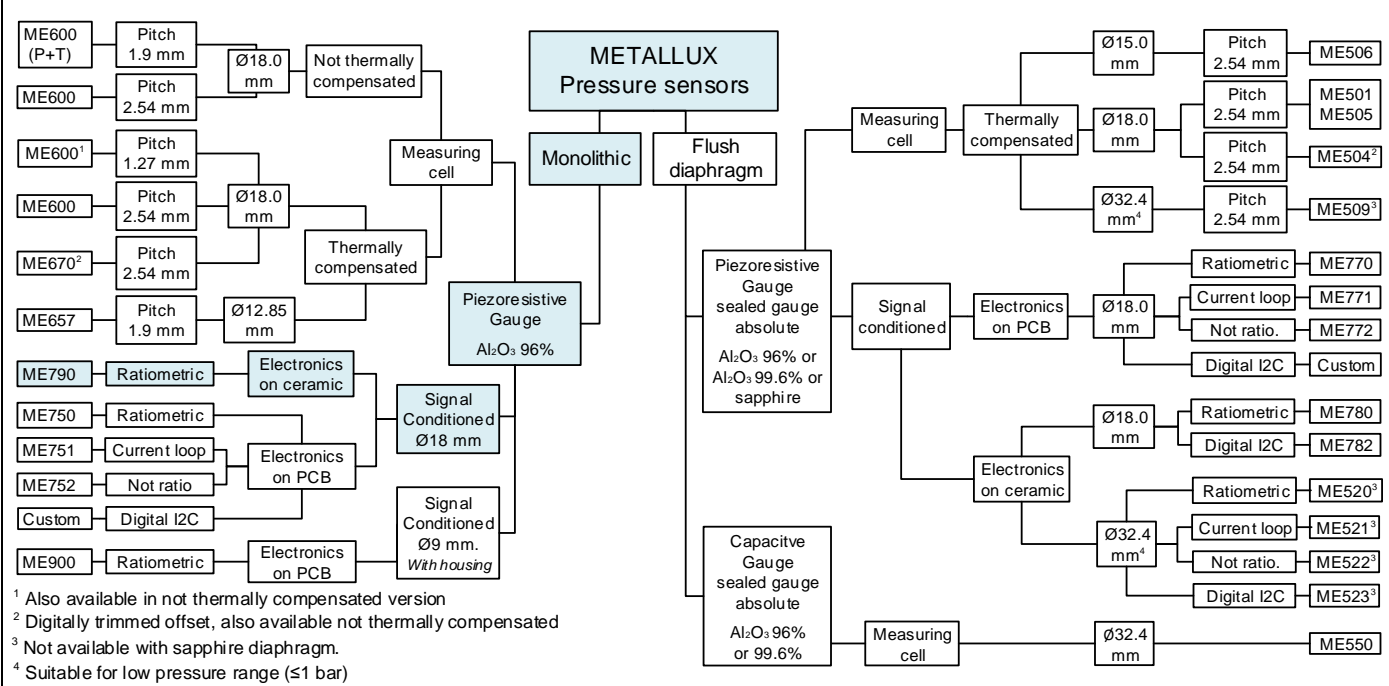
The Metallux ME790 family meets EMC requirements. The ASIC stores production lot specific data for sensor traceability and allows custom calibration.

Due to the excellent chemical immunity of the the Al₂O₃ ceramic, the ME790 sensors are suitable for nearly all aggressive media.

- FEATURES**
- Excellent resistance to corrosion and abrasion
 - Fully integrated signal conditioning
 - EMC compliant
 - Thermally compensated
 - Zero stress mounting software



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

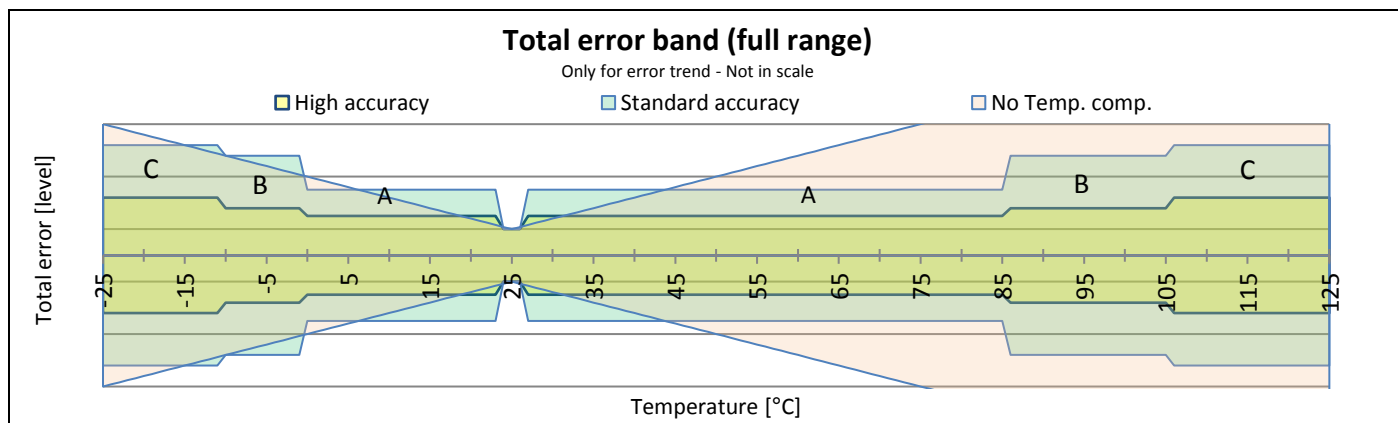
Parameters	Units	ME790 / MEP790	
Output	-	Ratiometric	
Output range	-	0.5...4.5 [V]	
Sensor type	-	Monolithic, gauge	
Technology	-	Piezoresistive with electronic signal conditioning	
Diaph. material	-	Ceramic Al ₂ O ₃ 96%	
Weight	g	≤ 9 (with standard wires)	
Response time	ms	≤ 5	
Supply voltage	VDC	4.5...5.5	
Max current ¹	mA	6 (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 ² compliances	-	Electrostatic discharge immunity	IEC/EN 61000-4-2(2009)
		Radiated electromagnetic field immunity	IEC/EN 61000-4-3(2006)
		Electrical fast transient (burst) immunity	IEC/EN 61000-4-4(2004) ²
		Surge immunity	Not applicable
		Conducted RF immunity immunity	IEC/EN 61000-4-6(20014)

Pressure range		ME790 / MEP790														
Nominal	ME	bar	2.5	4	5	6	10	16	20	25	40	50	100	200	250	400
Pressure ³	MEP	psi ⁴	50	60	100	115	150	300	400	500	750	1000	1500	3000	4000	5000
Overload pressure		bar	10	10	10	10	20	40	40	40	100	100	150	300	375	500
		psi	145	145	145	145	290	580	580	580	1450	1450	2175	4350	5440	7250
Burst pressure		bar	20	20	20	20	35	60	60	60	140	140	300	400	500	650
		psi	290	290	290	290	507	870	870	870	2030	2030	4350	5800	7250	9425
Vacuum capability		bar	-0.9	-0.9	-0.9	-0.9	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
		psi	-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 ⁵ [%FS]	Calibration with high accuracy						
25°C (77 °F)	1.0						
A) 0...85°C (32...185 °F)	1.5		1.4		1.6		1.8
B)-10...105°C (14...221 °F)	1.8		1.7		1.8		2.2
C)-25...125°C (-13...257°F)	2.2		2		2.2		2.5
Accuracy ⁵ [%FS]	Calibration with standard accuracy						
25°C (77 °F)	1.0						
A) 0...85°C (32...185 °F)	2.5		2.4		2.6		2.8
B)-10...105°C (14...221 °F)	3.8		3.7		3.8		4.2
C)-25...125°C (-13...257°F)	4.2		4.0		4.2		5.5
Accuracy ⁵ [%FS]	Calibration without thermal compensation						
25°C (77 °F)	1.0						
-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 and a power supply of 5 VDC.

1. During calibration or auto-zero, current consumption is < 30 mA
2. All EMC/ESD test are performed in Metallux housing grounded. EFT/Burst level is according to EN 61326-1:2013
3. Pressure ranges not shown specifically in the technical chart have performance of the nearest listed pressure range.
4. Psi values are not the exact conversion of bar value. PSI ranges are defined to cover different standard values.
5. 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
<p> $\varnothing 18 \pm 0.10 [0.709 \pm 0.004]$ Retaining Min $\varnothing 15.80 [0.622]$ $30^\circ \pm 2^\circ$ $5.40 [0.213]$ VCC GND OUT </p>	<p> $6.35 \pm 0.05 [0.250 \pm 0.002]$ $0.98 [0.039]$ P </p>
Bottom View (5...400 bar – 7.5...1000 psi)	Notes
<p> Sealing Area Max $\varnothing 15.88 [0.63]$ Sealing Area Min $\varnothing 7 [0.28]$ $5.60 [0.22]$ $(4x)R0.75 [0.03]$ </p>	<p>Notes</p>
<p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p>	

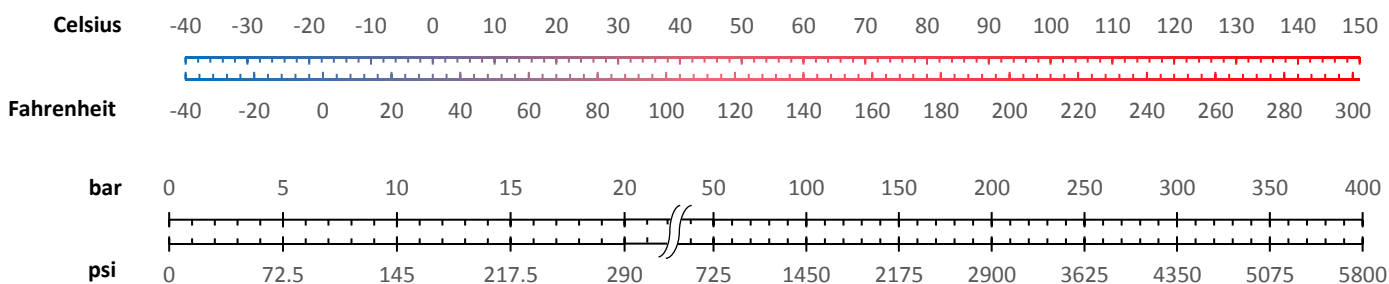
Electrical terminations

ME790 Example: type 1, pads	ME790 Example: type 0, wires L= 50.8 mm
<p> <u>Pitch:</u> $1.27 \pm 0.05 [0.05 \pm 0.002]$ <u>Max. tin thickness:</u> $0.3 [0.01]$ <u>Op. Temp:</u> $-40^\circ\text{C} \dots +135^\circ\text{C} (-40^\circ\text{F} \dots 275^\circ\text{F})$ </p> <p>Vout GND Vcc</p>	<p> <u>Wire section:</u> AWG 26 <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>Op. Temp:</u> $-25^\circ\text{C} \dots +125^\circ\text{C} (-13^\circ\text{F} \dots 257^\circ\text{F})$ </p> <p> V- = Ground [black] Vout = Analog output [white] Vcc = Power Supply [red] </p> <p>Vout GND Vcc</p>
<p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p>	

Ordering code

	ME	-	790	---	-	-	-	
Pressure unit	bar		blank					
	psi		P					
Pressure range	ME		MEP		ME – MEP			
	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	
	Others on request (please specify)						9	
Additional coating	Without						0	
	Parylene coating						1	
	Others on request (please specify)						9	

Conversion tools



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