

Metallux ME78x and MEP78x pressure sensors are made with a ceramic base plate and a flush diaphragm and they 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. Signal conditioning electronics is directly integrated on the ceramic to generate 0.5...4.5 V ratiometric output (ME780) or I²C output with pressure and temperature information (ME782). Calibration is done electronically with the on-board ASIC and it can be performed in bar (ME78x) or in psi (MEP78x). Electronics provides offset and span correction when the temperature changes. Zero correction software to compensate offset shift due to final customer assembly available on request. This allows good precision and long-term stability. The Metallux ME78x family meets EMC requirements. The ASIC EEPROM stores production lot specific data for sensor traceability and it allows custom calibration. Due to the excellent chemical resistance of the Al₂O₃ ceramic, the ME78x sensors are suitable for nearly all aggressive media. Metallux ME78x are patented sensors.

FEATURES

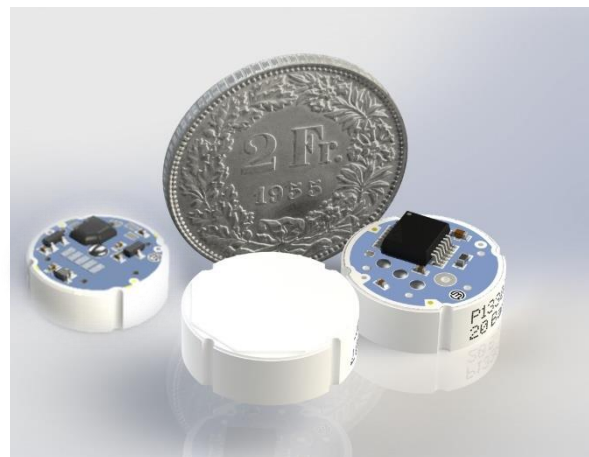
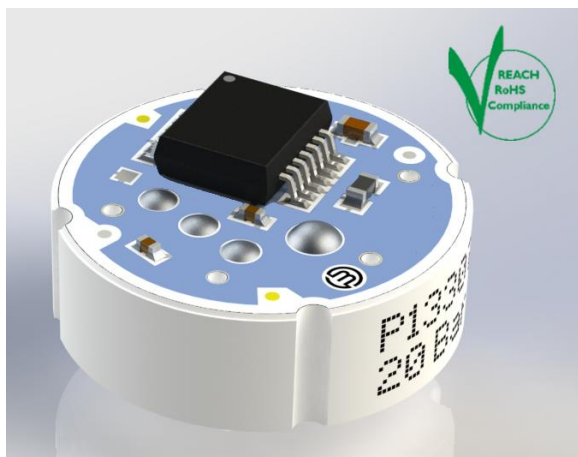
Excellent resistance to corrosion and abrasion

Fully integrated signal conditioning

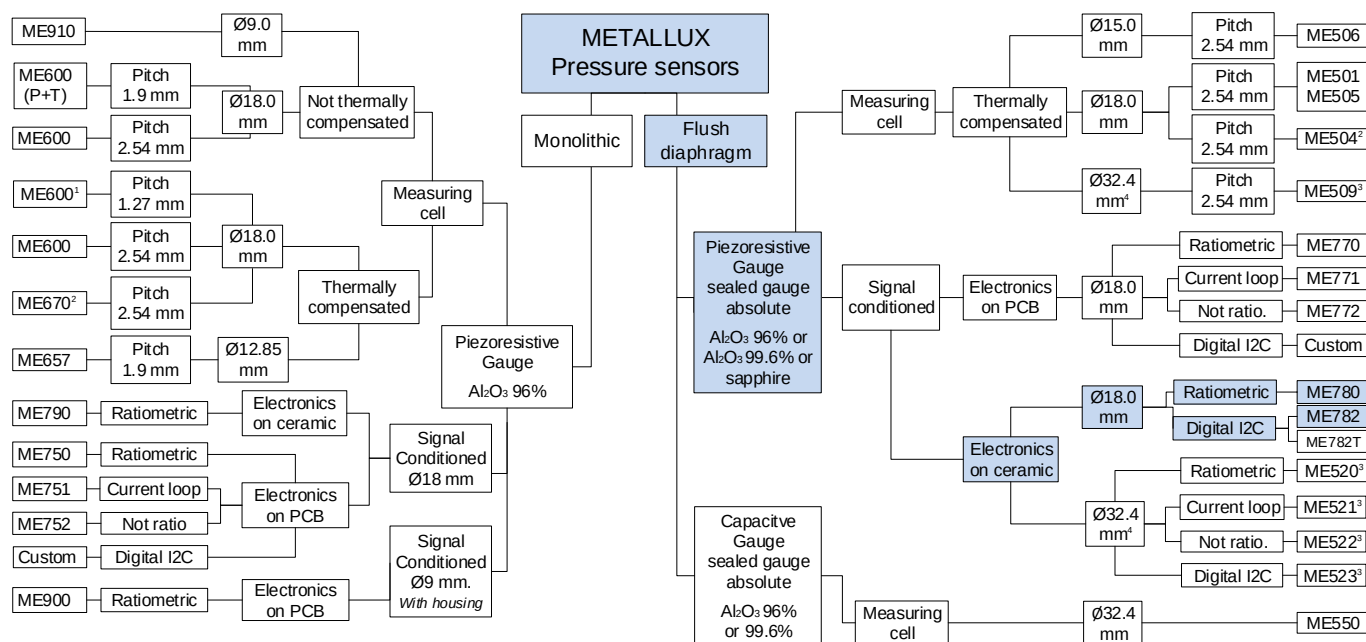
EMC compliant

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

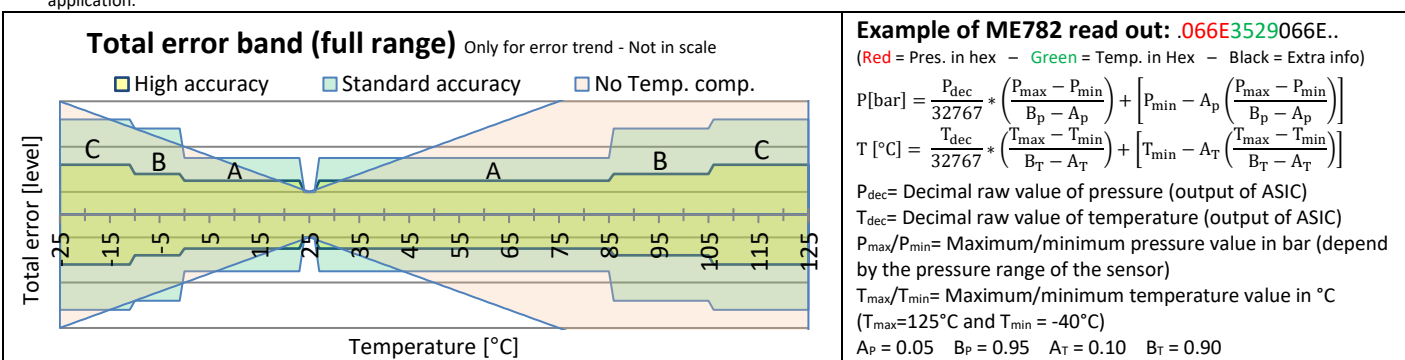
Parameters	Units	ME780	ME782
Output	-	Ratiometric	Digital I ² C
Output range	-	0.5...4.5 [V]	Pres: 5...95% of 15bits (output register address: 0x78) Temp: 10...90% of 15bits (-40...125°C)
Sensor type	-	Flush diaphragm, absolute (A), gauge (R) or sealed gauge (S)	
Technology	-	Piezoresistive with electronic signal conditioning	
Diaph. material	-	Ceramic Al ₂ O ₃ 96%, 99.6% or sapphire	
Weight	g	≤ 9 (excluding connections)	
Response time	ms	≤ 5	
Supply voltage	VDC	4.5...5.5	3.3 or 5.0 (depending on calibration settings)
Max current ¹	mA	6 (R _{LOAD} ≥ 2 kΩ)	4.5
Operating temp.	°C	-25...+125 (-13 °F...+257 °F)	-25...+105 (-13 °F...+221 °F)
Storage temp.	°C	-40...+135 (-40 °F...+275 °F)	-40...+125 (-40 °F...+257 °F)
Compliant with	-	Reach, RoHS, Conflict Minerals free	
EMC/ESD ² compliances	-	Electrostatic discharge immunity Radiated electromagnetic field immunity Electrical fast transient (burst) immunity Surge immunity Conducted RF immunity	IEC/EN 61000-4-2(2009) IEC/EN 61000-4-3(2006) IEC/EN 61000-4-4(2004) ² Not applicable IEC/EN 61000-4-6(2014)

Pressure ranges			ME78x											
Nominal	ME	bar	0.5	1	2	5	10	20	50	100	200	250	400	600
Pressure ³	MEP	psi ⁴	7.5	15	30	100	150	400	1000	1500	3000	4000	5000	8500
Overload pressure		bar	1	2	4	10	15	35	100	150	350	350	500	750
		psi	15	29	58	145	217	507	1450	2175	5075	5075	7250	10875
Burst pressure		bar	2	3	6	15	25	65	120	200	500	500	650	950
		psi	29	43	87	217	362	942	1740	2900	7250	7250	9425	13775
Vacuum capability		bar	-0.1	-0.5	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
		psi	-1.5	-7.3	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5
Pressure type	-	R	A/R/S	A/R/S	A/R/S	A/R/S	A/R/S	A/R/S	A/R/S	S	S	S	S	S
Sensor thickness		mm	6.15	6.17	6.23	6.30	6.35	6.55	6.70	6.70	7.05	7.05	7.32	7.55
		in	0.242	0.243	0.245	0.248	0.250	0.258	0.263	0.263	0.278	0.278	0.288	0.297

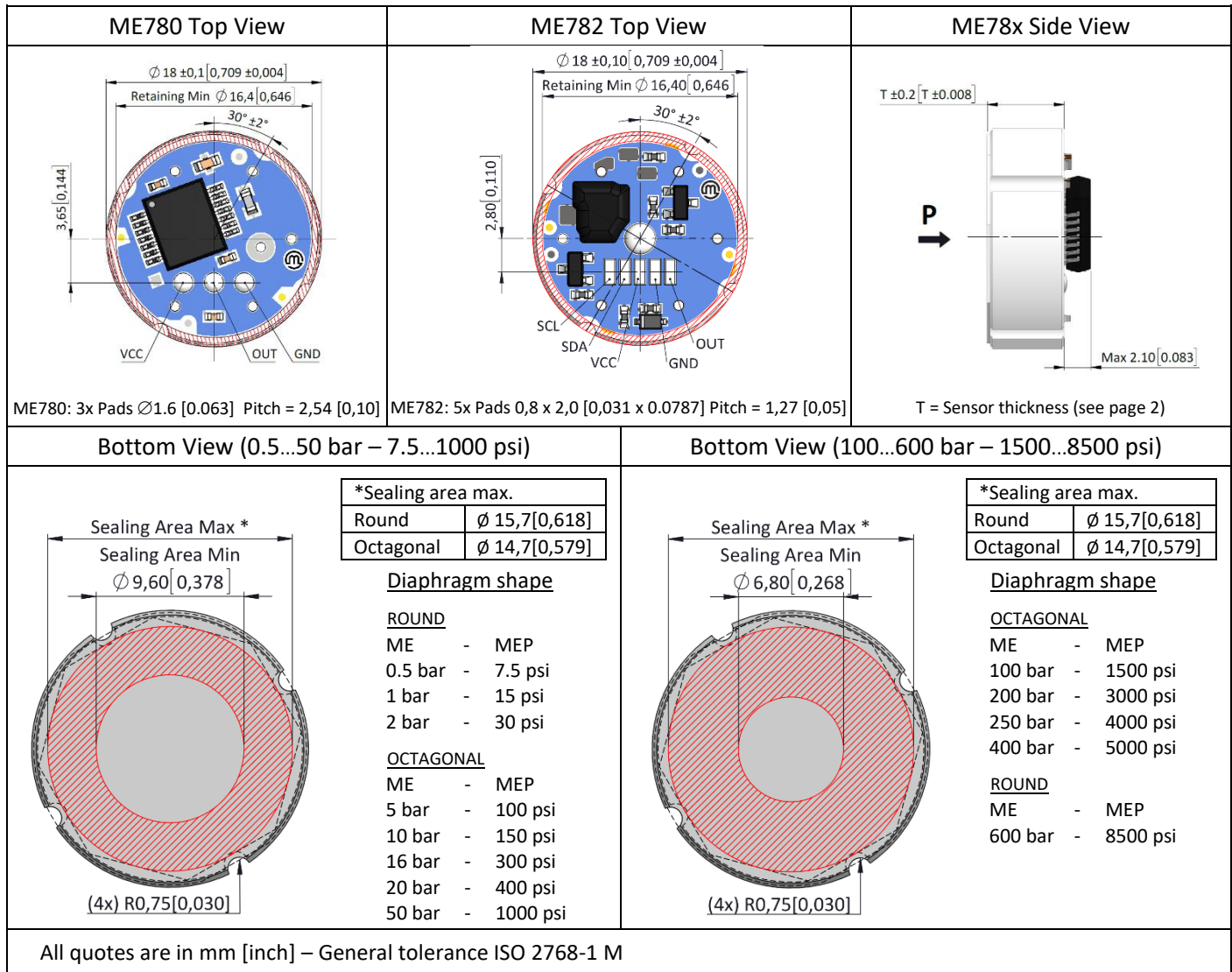
Accuracy ⁵ [%FS]		Calibration with high accuracy					
25°C (77 °F)		1.5			1.0		1.5
A) 0...85 °C (32...185°F)		1.5		1.4	1.6	1.8	2.8
B)-10...105°C (14...221°F)		1.8		1.7	1.8	3.2	3.2
C)-25...125°C (-13...257°F)		2.2		2.0	2.2	3.5	3.5
Accuracy ⁵ [%FS]		Calibration with standard accuracy					
25°C (77 °F)		1.5			1.0		1.5
A) 0...85 °C (32...185°F)		2.5		2.4	2.6	2.8	3.8
B)-10...105°C (14...221°F)		3.8		3.7	3.8	4.2	4.6
C)-25...125°C (-13...257°F)		4.2		4.0	4.2	4.5	5.5
Accuracy ⁵ [%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 and a power supply of 5 VDC.

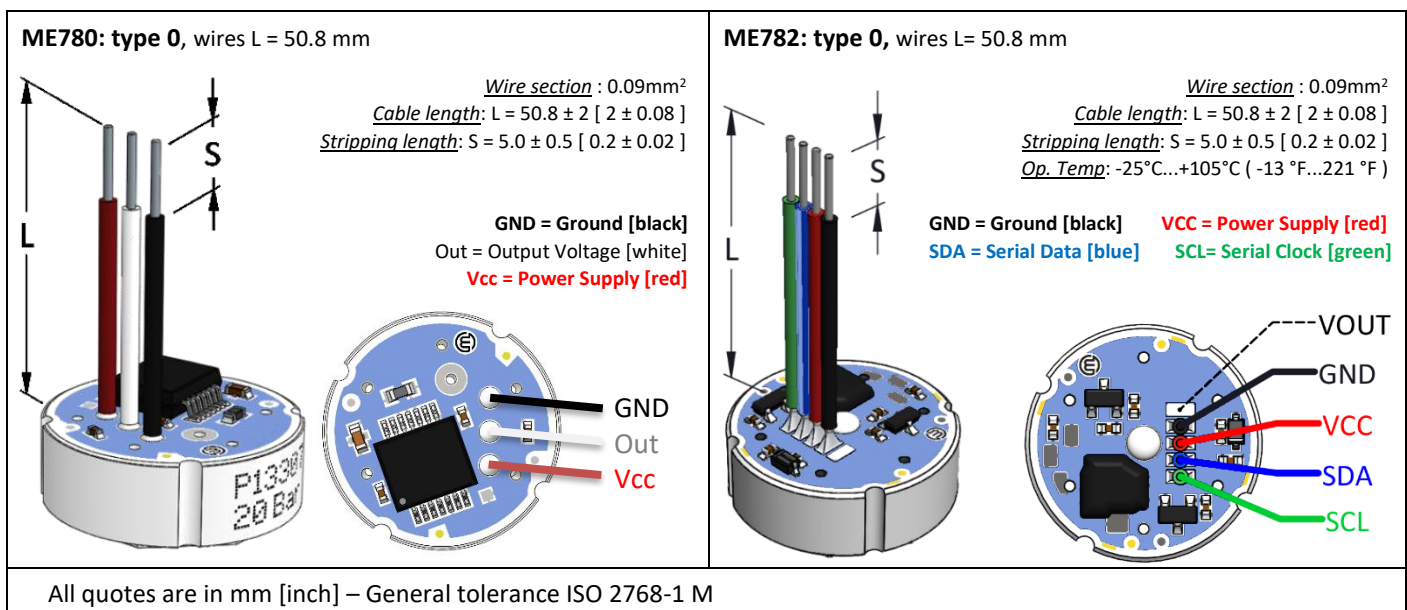
- During calibration or auto-zero, current consumption is < 30 mA.
- All EMC/ESD test are performed inside grounded Metallux housing. EFT/Burst level is according to EN 61326-1:2013
- Pressure ranges not listed in the technical chart have performances of the nearest listed pressure range. Contact us for customization.
- Psi values are not the exact conversion of bar value. PSI ranges are defined to cover different standard values.
- 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



Electrical terminations

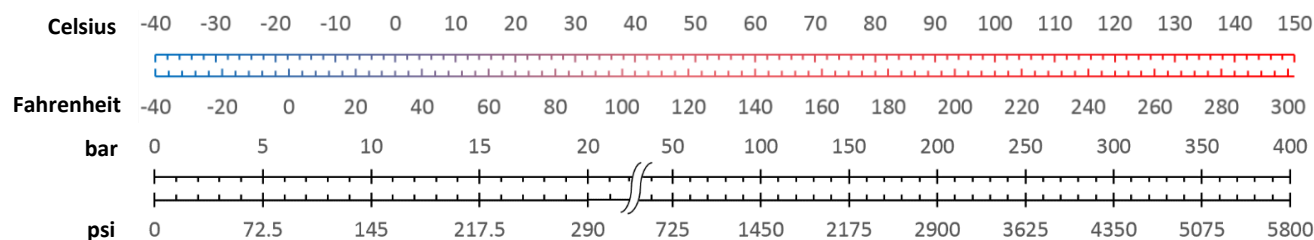


Ordering code

	ME				-	78	-	-	---	-	-	-	-	-	-
Pressure unit	bar					blank					Sold in North America By Servoflo Corporation 75 Allen Street Lexington, MA 02421 Tel: 781-862-9572 www.servoflo.com / info@servoflo.com				
	psi					P									
Output signal	Ratiometric					0.5...4.5 [V]		0							
	Digital I ² C					5%...95% 15 bit ADC		2							
Sensor Type	Absolute							A							
	Gauge							R							
	Sealed gauge							S							
Pressure range	ME		MEP				ME – MEP								
	0...0.5 bar	or	0...7.5 psi	[-/R/]		0p5 – 7p5									
	0...1bar	or	0...15psi	[A/R/S]		001 – 015									
	0...2 bar	or	0...30 psi	[A/R/S]		002 – 030									
	0...5 bar	or	0...100 psi	[A/R/S]		005 – 100									
	0...10 bar	or	0...150 psi	[A/R/S]		010 – 150									
	0...20 bar	or	0...400 psi	[A/R/S]		020 – 400									
	0...50 bar	or	0...1000 psi	[A/R/S]		050 – 1k0									
	0...100 bar	or	0...1500 psi	[-/-/S]		100 – 1k5									
	0...200 bar	or	0...3000 psi	[-/-/S]		200 – 3k0									
	0...250 bar	or	0...4000 psi	[-/-/S]		250 – 4k0									
	0...400 bar	or	0...5000 psi	[-/-/S]		400 – 5k0									
	0...600 bar	or	0...8500 psi	[-/-/S]		600 – 8k5									
	Others on request (enquiry for customization)							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 (enquiry for customization)							9							
Termination type	Wires 50.8 mm							0							
	Tinned pads							1							
	Others on request (enquiry for customization)							9							
Power Supply	5 V							0							
	3.3 V (Only ME782)							1							
Diaphragm type	Ceramic Al ₂ O ₃ 96.0% purity							0							
	Different purity on request (Al ₂ O ₃ 99.6%, sapphire...)							9							
Venting hole pipe	Without							0							
	Venting pipe on request (Metal pipe Ø1.2 mm, for gauge sensor only)							9							
Coating	Standard conformal coating													Blank	
	Parylene or other coating (enquiry for customization)													Custom	

* ME782 temperature output is not available with this calibration option. Temperature signal is available only with high/standard accuracy.

Conversion tools



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