

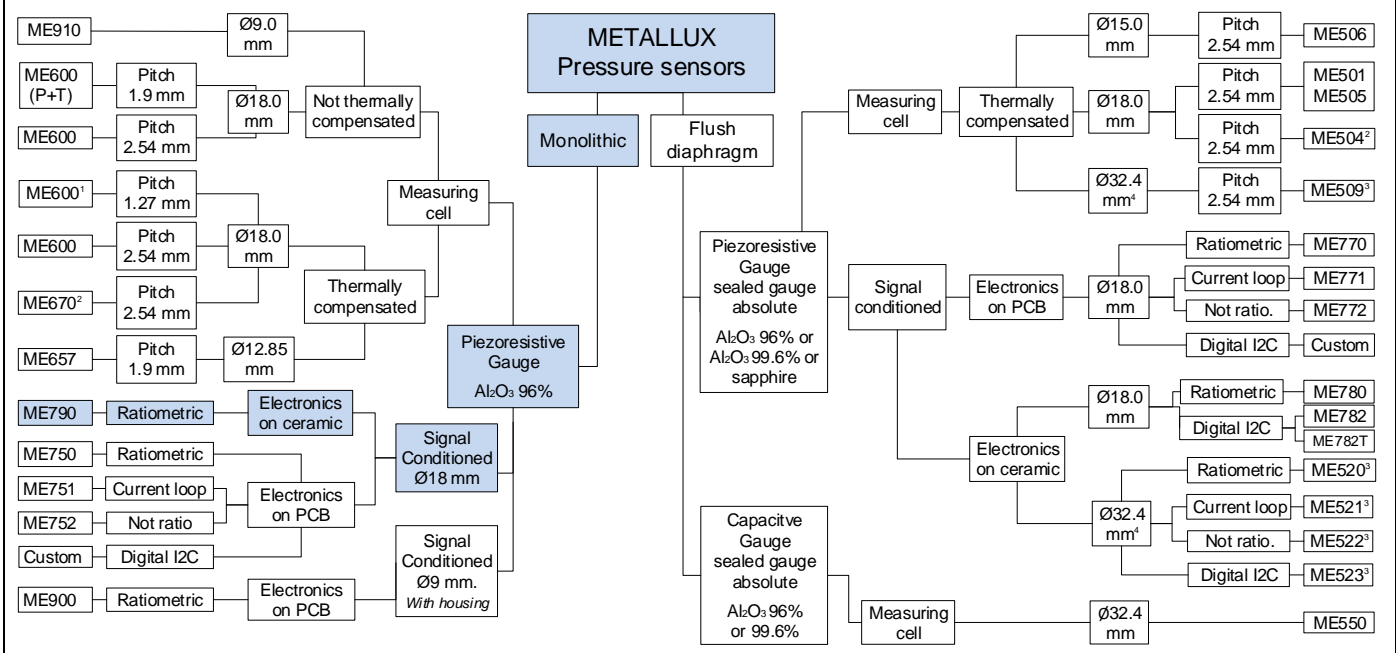


Metallux ME790 and MEP790 pressure sensors are made with a monolithic ceramic cell and they work following the piezoresistive principle. The Wheatstone bridge is screen printed directly on one side of the ceramic cell by means of Thick Film technology and signal conditioning electronics generates 0.5...4.5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

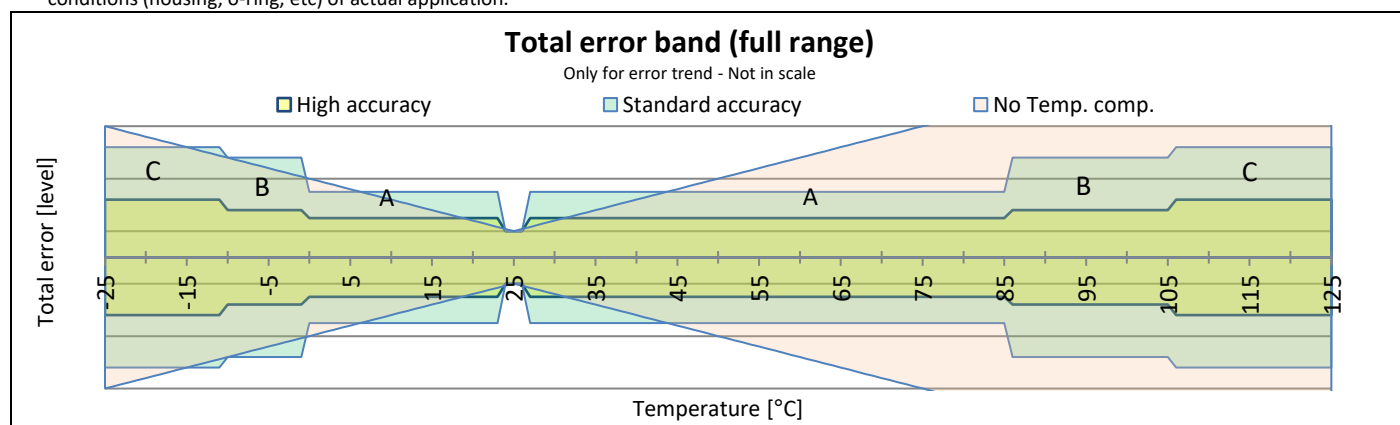
| Parameters | Units | ME790 / MEP790 |
|----------------------------------|-------|---|
| Output | - | Ratiometric |
| Output range | - | 0.5...4.5 [V] |
| Sensor type | - | Monolithic, gauge |
| Technology | - | Piezoresistive with electronic signal conditioning |
| Diaph. material | - | Ceramic Al ₂ O ₃ 96% |
| Weight | g | ≤ 6 (excluding connections) |
| 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/ESD 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(2014) |

| Pressure range | | ME790 / MEP790 | | | | | | | | | |
|-----------------------|-----|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Nominal | ME | bar | 3 | 5 | 10 | 20 | 50 | 100 | 200 | 250 | 400 |
| Pressure ³ | MEP | psi ⁴ | 50 | 100 | 150 | 400 | 1000 | 1500 | 3000 | 4000 | 5000 |
| Overload pressure | | bar | 10 | 10 | 20 | 40 | 100 | 150 | 300 | 375 | 500 |
| | | psi | 145 | 145 | 290 | 580 | 1450 | 2175 | 4350 | 5440 | 7250 |
| Burst pressure | | bar | 20 | 20 | 35 | 60 | 140 | 300 | 400 | 500 | 650 |
| | | psi | 290 | 290 | 507 | 870 | 2030 | 4350 | 5800 | 7250 | 9425 |
| Vacuum capability | | bar | -0.9 | -0.9 | -1 | -1 | -1 | -1 | -1 | -1 | -1 |
| | | psi | -13.1 | -13.1 | -14.5 | -14.5 | -14.5 | -14.5 | -14.5 | -14.5 | -14.5 |

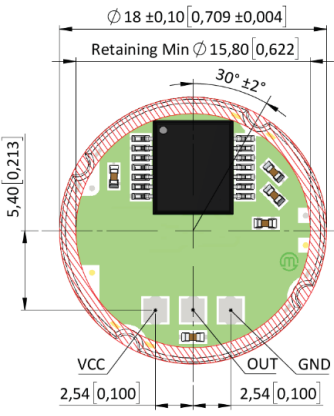
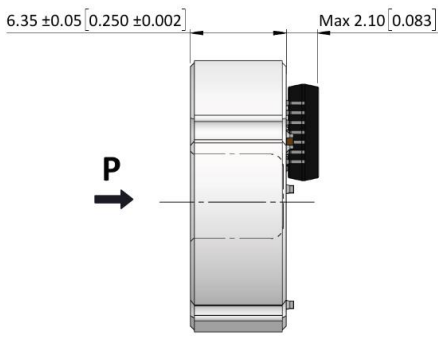
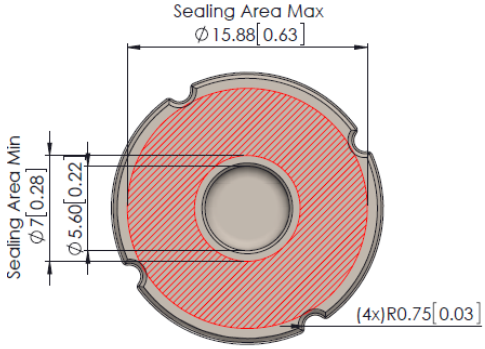
| Accuracy ⁵ [%FS] | Calibration with high accuracy | | | | | | | | | | | |
|-----------------------------|--|--|-----|--|-----|--|-----|-----|-----|--|-----|--|
| 25°C (77 °F) | 1.0 | | | | | | | 1.5 | | | | |
| A) 0...85°C (32...185 °F) | 1.5 | | 1.4 | | 1.6 | | 1.8 | | 2.4 | | 2.4 | |
| B)-10...105°C (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 ⁵ [%FS] | Calibration with standard accuracy | | | | | | | | | | | |
| 25°C (77 °F) | 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 ⁵ [%FS] | Calibration without thermal compensation | | | | | | | | | | | |
| 25°C (77 °F) | 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.


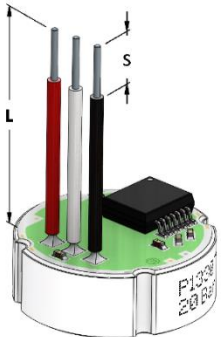
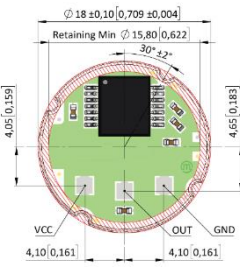


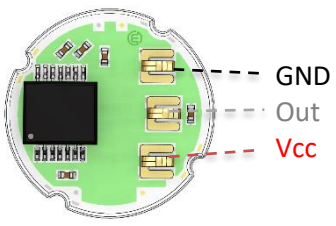
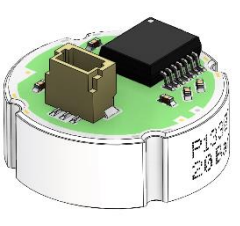
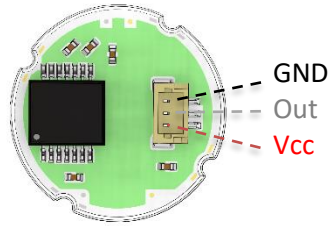
1. During calibration or auto-zero, current consumption is < 30 mA
2. All EMC/ESD test are performed in grounded Metallux housing. EFT/Burst level is according to EN 61326-1:2013
3. Pressure ranges not listed in the technical chart have performances of the nearest listed pressure range. Contact us for customization.
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 | Bottom View (3...400 bar – 50...5000 psi) |
|--|---|--|
| <p>Type 0 version.</p>  <p>3x Pads 1.6 x 1.6 [0.063 x 0.063] Pitch=2.54 [0.1]</p> |  <p>NOTE: see below for springs or connector height.</p> |  <p>For Oring calculation consider misalignments.</p> |
| <p>All quotes are in mm [inch] – General tolerance ISO 2768-1 M</p> | | |

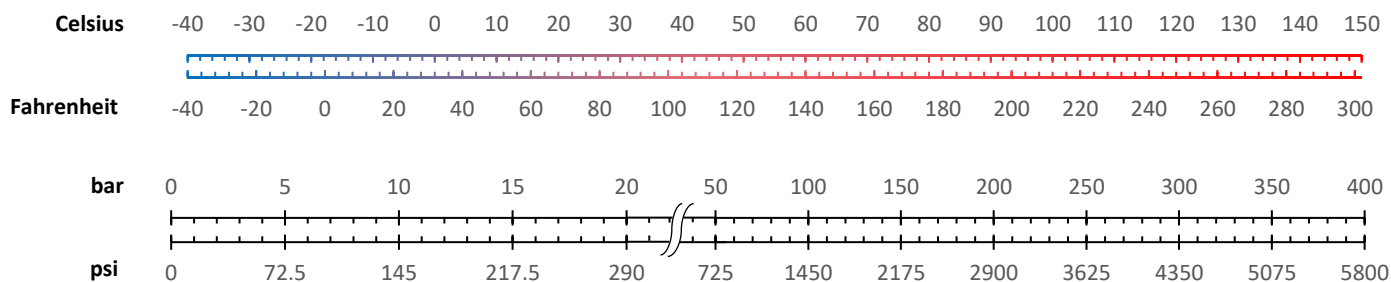
Electrical terminations

| | |
|--|--|
| <p>ME790: type 0, wires L= 50.8 mm; type 9, pins L = 9 mm</p>  <p><i>Wire section</i> : 0.09mm² <i>Cable length</i>: L = 50.8 ± 2 [2 ± 0.08] <i>Stripped wire length</i>: S = 5.0 ± 0.5 [0.2 ± 0.02] <i>Soldered pins length</i>: L = 9.0 ± 0.5 [0.35 ± 0.02] <i>Pitch</i>: 2.54 ± 0.10 [0.100 ± 0.004]</p>  <p>GND = Ground [black] Out = Output voltage [white] Vcc = Power Supply [red]</p> | <p>ME790: type 1, tinned pads</p>  <p><i>Pitch</i>: 4.10 ± 0.05 [0.161 ± 0.002] <i>Max. tin solder thickness</i>: 0.3 [0.01]</p>  |
| <p>ME790: type 9, springs (contact us for customization)</p> <p><i>Pitch</i>: 4.10 ± 0.10 [0.161 ± 0.004] <i>Compr. force</i>: 6...9 N to have 4.5mm [0.177] <i>Springs height</i>: 4.9 ± 0.2 [0.193 ± 0.008]</p>   <p>GND Out Vcc</p> | <p>ME790: type 9, connector (contact us for customization)</p> <p><i>Pitch</i>: 1.00 ± 0.10 [0.039 ± 0.004] <i>Connector type</i>: BM03B-SRSS-TBT 3 poles <i>Op. Temp</i>: -25°C...+85°C (-13 °F...185 °F) <i>Connector height</i>: 4.25 ± 0.15 [0.167 ± 0.006]</p>   <p>GND Out 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...3 bar | or 0...50 psi | 003 – 050 | | | | |
| | 0...5 bar | or 0...100 psi | 005 – 100 | | | | |
| | 0...10 bar | or 0...150 psi | 010 – 150 | | | | |
| | 0...20 bar | or 0...400 psi | 020 – 400 | | | | |
| | 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 (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 (springs, pins 9mm, SMD connector, others) | | | | 9 | | |
| Coating | Standard conformal coating | | | | | Blank | |
| | Parylene or other coating (enquiry for customization) | | | | | Custom | |

Conversion tools



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