ME501/ME505 pressure sensors are made with a ceramic base plate and a flush diaphragm and 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 and the diaphragm’s opposite side can therefore 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. Metallux ME501/ME505 sensors are thermally compensated by laser-adjustable PTC resistors and the use of ceramic ensures a high linearity across the entire range of measurement, reducing effects of hysteresis to a minimum.

**FEATURES**
- Excellent resistance to corrosion and abrasion
- Absolute measurement available
- Thermally compensated
- Extended customization
- Extended choice of measuring ranges

---

**Pressure sensors family tree**

**METALLUX Pressure sensors**

- **Piezoresistive Gauge**
  - Al₂O₃ 96% or Al₂O₃ 99.6% or sapphire

- **Capacitive Gauge**
  - Sealed gauge absolute Al₂O₃ 96% or 99.6%

**Flush diaphragm**

- Signal conditioned
- Electronics on PCB
- Ø18.0 mm
- Measuring cell
- Measured

**Monolithic**

- Signal conditioned
- Electronics on ceramic
- Ø18.0 mm
- Measuring cell
- Measured

**ME600**

- Pitch: 1.9 mm
- Ø18.0 mm
- Not thermally compensated

**ME600**

- Pitch: 2.54 mm
- Ø18.0 mm
- Thermally compensated

**ME600/1**

- Pitch: 2.54 mm
- Ø18.0 mm
- Thermally compensated

**ME657**

- Pitch: 1.9 mm
- Ø12.85 mm
- Thermally compensated

**ME790**

- Ratiometric
- Electronics on ceramic
- Signal Conditioned Ø18 mm

**ME751**

- Not ratio
- Electronics on ceramic
- Signal Conditioned Ø9 mm, With housing

**ME500**

- Ratiometric
- Digital I²C
- Capable of low pressure range (≤1 bar)

---

*Also available in not thermally compensated version

*Digitally trimmed offset, also available not thermally compensated

*Not available with sapphire diaphragm.

*Suitable for low pressure range (≤1 bar)
### Technical characteristics

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor type</td>
<td>-</td>
<td>Flush diaphragm, absolute (A), gauge (R) or sealed gauge (S)</td>
</tr>
<tr>
<td>Technology</td>
<td>-</td>
<td>Piezoresistive</td>
</tr>
<tr>
<td>Diaphragm material</td>
<td>-</td>
<td>Ceramic Al₂O₃, 96% (standard), 99.6% or sapphire (on request)</td>
</tr>
<tr>
<td>Weight</td>
<td>g</td>
<td>≤ 8 (ceramic cell only)</td>
</tr>
<tr>
<td>Response time</td>
<td>ms</td>
<td>≤ 1</td>
</tr>
<tr>
<td>Supply voltage VDC</td>
<td></td>
<td>2…30</td>
</tr>
<tr>
<td>Offset</td>
<td>mV/V</td>
<td>- 0.1 ± 0.1  (Other nominal values available on request)</td>
</tr>
<tr>
<td>Current cons. mA</td>
<td></td>
<td>≤ 1.3 @ 10V</td>
</tr>
<tr>
<td>Operating temperature °C</td>
<td></td>
<td>-40...+135 (-40 °F...+275 °F)</td>
</tr>
<tr>
<td>Storage temperature °C</td>
<td></td>
<td>-40...+150 (-40 °F...+302 °F)</td>
</tr>
<tr>
<td>Impedance</td>
<td>kΩ</td>
<td>11 ± 30%</td>
</tr>
<tr>
<td>Compliant with</td>
<td>-</td>
<td>REACH, RoHS, Conflict Minerals Free</td>
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</tbody>
</table>

#### Conversion tools

**Celsius**

<table>
<thead>
<tr>
<th>-40</th>
<th>-30</th>
<th>-20</th>
<th>-10</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
<th>110</th>
<th>120</th>
<th>130</th>
<th>140</th>
</tr>
</thead>
</table>

**Fahrenheit**

| -40 | -20 | 0   | 20  | 40  | 60  | 80  | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| bar | 0   | 5   | 10  | 15  | 20  | 50  | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| psi | 0   | 72.5 | 145 | 217.5 | 290 | 362.5 | 435 | 507.5 | 5800 |

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 =√NonLinearity²+Hysteresis²+NonRepeatability², terminal based.
4. All technical characteristics will remain within indicated ranges performing the above-mentioned reliability tests.

### ME501/ME505 datasheet

#### ME501

- Nominal pressure FSO
- Overload pressure
- Burst pressure
- Vacuum capability
- Type
- Total thickness
- Sensitivity
- Accuracy (typ./max.)
- Thermal offset shift (typ./max.)
- Thermal span shift
- Reliability tests

#### ME505

- Nominal pressure FSO
- Overload pressure
- Burst pressure
- Vacuum capability
- Type
- Total thickness
- Sensitivity
- Accuracy (typ./max.)
- Thermal offset shift (typ./max.)
- Thermal span shift
- Reliability tests

#### Conversion tools

**Celsius**

| -40 | -30 | -20 | -10 | 0   | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

**Fahrenheit**

| -40 | -20 | 0   | 20  | 40  | 60  | 80  | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

<table>
<thead>
<tr>
<th>bar</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
</tr>
</thead>
</table>

| psi | 0   | 72.5 | 145 | 217.5 | 290 | 362.5 | 435 | 507.5 | 5800 |

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Email: info@metallux.ch
### Mechanical drawings and electrical schematics

#### Top View

![Top View Diagram](image)

(5x) Pads 1.6x1.6[0.063x0.063]  
Pitch=2.54[0.1]

#### Side View

![Side View Diagram](image)

T = sensor total thickness (see pag.2)

#### Schematics

![Schematic Diagram](image)

#### ME501 Bottom View

![ME501 Bottom View Diagram](image)

**Sealing area max.**

- **Round**: Ø 15,7[0,618]
- **Octagonal**: Ø 14,7[0,579]

**Diaphragm shape:**

- **ROUND**
  - 0.5 bar - 7 psi
  - 1 bar - 14 psi
  - 2 bar - 29 psi
- **OCTAGONAL**
  - 5 bar - 72 psi
  - 10 bar - 145 psi
  - 20 bar - 290 psi
  - 50 bar - 720 psi

**Sealing area min.**

- **Round**: 0.6[0,024]
- **Octagonal**: 0.268

(4x) R0.75[0,030]

**All quotes are in mm [inch] – General tolerance ISO 2768-1 M**

---

### Electrical terminations

#### Example: type 03, pre-tinned soldering pads

- **Pitch**: 2.54 ± 0.05 [0.1 ± 0.002]
- **Max. tin thickness**: 0.3 [0.01]
- **Op. Temp.**: -40°C...+135°C (-40°F...275 °F)

#### Example: type 01, 5 pins L = 13.0 ± 0.5 [0.51 ± 0.02]

- **Pitch**: 2.54 ± 0.05 [0.1 ± 0.002]
- **Pin section**: 0.51 ± 0.02
- **Op. Temp.**: -40°C...+135°C (-40°F...275 °F)

#### Example: type 09, polyester cable

- **Wire section**: AWG24
- **Pitch**: 2.54 ± 0.05 [0.1 ± 0.002]
- **Cable length**: 50.8 ± 2 [2 ± 0.08]
- **Stripping length**: S = 3.2 ± 0.7 [0.13 ± 0.028]
- **Op. Temp.**: -40°C...+105°C (-40°F...+221 °F)

#### Other types available

- **Type 31**: 5 pins L = 9 ± 0.5 [0.51 ± 0.02]
- **Type 02 or 06**: 4 pins L = 13 ± 0.5 (without LO (-) or Lo (+))
- **Type 32 or 36**: 4 pins L = 9 ± 0.5 (without LO (-) or Lo (+))
- **Type 04**: NOMEX™ cable, 50.8 mm, Op. Temp: -40°C...+135°C
- **Type 05**: PVC flat cable, 50.8 mm, Op. Temp: -20°C...+105°C
- **Type 07**: 5 pins L = 13 ± 0.5 [0.51 ± 0.02] – open bridge
- **Type 37**: 5 pins L = 9 ± 0.5 [0.51 ± 0.02] – open bridge
- **Type 99**: customization on request

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*All quotes are in mm [inch] – General tolerance ISO 2768-1 M*
### Ordering code

<table>
<thead>
<tr>
<th>ME501/S</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

#### Sensor type
- Absolute A
- Gauge R
- Sealed Gauge S

#### Pressure range

<table>
<thead>
<tr>
<th>Range</th>
<th>Pressure</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...0.5 bar</td>
<td>0...7 psi</td>
<td>ME501 -/R/- 0p5</td>
</tr>
<tr>
<td>0...1 bar</td>
<td>0...14 psi</td>
<td>ME501 A/R/S 001</td>
</tr>
<tr>
<td>0...2 bar</td>
<td>0...29 psi</td>
<td>ME501 A/R/S 002</td>
</tr>
<tr>
<td>0...5 bar</td>
<td>0...72 psi</td>
<td>ME501 A/R/S 005</td>
</tr>
<tr>
<td>0...10 bar</td>
<td>0...145 psi</td>
<td>ME501 A/R/S 010</td>
</tr>
<tr>
<td>0...20 bar</td>
<td>0...290 psi</td>
<td>ME501 A/R/S 020</td>
</tr>
<tr>
<td>0...50 bar</td>
<td>0...720 psi</td>
<td>ME501 A/R/S 050</td>
</tr>
<tr>
<td>0...100 bar</td>
<td>0...1450 psi</td>
<td>ME505 -/-/S 100</td>
</tr>
<tr>
<td>0...200 bar</td>
<td>0...2900 psi</td>
<td>ME505 -/-/S 200</td>
</tr>
<tr>
<td>0...400 bar</td>
<td>0...5800 psi</td>
<td>ME505 -/-/S 400</td>
</tr>
<tr>
<td>0...600 bar</td>
<td>0...8700 psi</td>
<td>ME505 -/-/S 600</td>
</tr>
<tr>
<td>0...800 bar</td>
<td>0...11600 psi</td>
<td>ME505 -/-/S 800</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>999</td>
</tr>
</tbody>
</table>

#### Sensitivity adjustment
- Without 0
- On request 9

#### Thermal offset shift adjustment
- ≤ ± 0.06 % FS/K (not thermally compensated) 0
- ≤ ± 0.04 % FS/K 1
- ≤ ± 0.02 % FS/K 2
- Others request (please specify) 9

#### Termination type

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 pins 13 mm ± 0.5 mm, pitch 2.54 mm</td>
<td>01</td>
</tr>
<tr>
<td>5 pins 9 mm ± 0.5 mm, pitch 2.54 mm</td>
<td>31</td>
</tr>
<tr>
<td>4 pins 13 mm (without LO (-)) ± 0.5 mm, pitch 2.54 mm</td>
<td>02</td>
</tr>
<tr>
<td>4 pins 9 mm (without LO (-)) ± 0.5 mm, pitch 2.54 mm</td>
<td>32</td>
</tr>
<tr>
<td>5 pre-tinned soldering pads, pitch 2.54 mm</td>
<td>03</td>
</tr>
<tr>
<td>NOMEX™ cable 50.8 mm – 5 wires, pitch 2.54 ± 0.5 mm</td>
<td>04</td>
</tr>
<tr>
<td>PVC flat cable 50.8 mm – 5 wires, pitch 1.27 mm</td>
<td>05</td>
</tr>
<tr>
<td>Polyester cable 50.8 mm – 5 wires, pitch 2.54 mm</td>
<td>09</td>
</tr>
<tr>
<td>4 pins 13 mm ± 0.5 mm (without LO (+)) pitch 2.54 mm</td>
<td>06</td>
</tr>
<tr>
<td>4 pins 9 mm ± 0.5 mm (without LO (+)) pitch 2.54 mm</td>
<td>36</td>
</tr>
<tr>
<td>5 pins 13 mm ± 0.5 mm – open bridge, pitch 2.54 mm</td>
<td>07</td>
</tr>
<tr>
<td>5 pins 9 mm ± 0.5 mm – open bridge, pitch 2.54 mm</td>
<td>37</td>
</tr>
<tr>
<td>Others on request (please specify)</td>
<td>99</td>
</tr>
</tbody>
</table>

#### Additional coating
- Without 1
- Parylene coating 2
- Others on request (please specify) 9

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

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Metallux SA reserves the right to change this datasheet without notice

www.metallux.ch