

# PCM167



PCM167 pressure sensor allows a combined pressure and temperature measurements at a same location. Wetted parts being all stainless steel, it is compatible with all common and hostile pressure media used in aerospace and automotive. Miniature dimensions, low mass and ruggedized design make PCM167 pressure sensor well adapted to embedded applications on vehicules, aircrafts, missiles, satellites, etc.

The pressure transducer utilizes EFE thin film technology and a platinum RTD senses media temperature. The pressure and temperature devices are designed to operate independently.

Output for pressure is an amplified 0.5-4.5Vdc while temperature signal is directly the one from PT100 or PT1000 sensor. Its small package and low mass make it very adapted to application where space is at a premium.

PCM167 is available with pressure ranges from -1 to 500bar and has high temperature capability, being rated -55/+175°C. A mV/V (PCM161) and a ratiometric (5V power supply, PCM163) models are also available in PCM160 series.

## FEATURES

- Pressure & Temperature Measurements
- All Stainless Steel Ruggedized Design
- Built-in electronics
- High temperature capability : -55 to +175°C
- Available up to 500bar

## APPLICATIONS

|   |              |
|---|--------------|
| X | Aerospace    |
| X | Defence      |
| X | Automotive   |
| X | Test Benches |
|   | Others       |



## TECHNICAL SPECIFICATIONS

- Pressure Specifications

|                            |                                                                                                                                                                                                                                 |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pressure ranges (FS)       | -1/+2bar; -1/+3bar; -1/+4bar;<br>3bar; 5bar; 10bar; 20bar; 40bar; 100bar; 250bar; 400bar; 500bar<br>-14.5/+30PSI ; -14.5/+40PSI ; -14.5/+60PSI;<br>40PSI; 70PSI; 150PSI; 300PSI; 500PSI; 1500PSI; 3000PSI; 5000PSI;<br>7000 PSI |
| Type                       | Absolute ; Gage                                                                                                                                                                                                                 |
| Type (for ranges > 40 bar) | Sealed Gage                                                                                                                                                                                                                     |
| Safe overload              | 150% FS                                                                                                                                                                                                                         |
| Burst pressure             | 300% FS or 1000bar whichever is less for M10x1 and 3/8-24 UNF male<br>300% FS or 400bar whichever is less for M8x1 male                                                                                                         |

- Electrical Specifications

|                                          |                                                                                                                                                                                             |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply                             | 8 to 16Vdc                                                                                                                                                                                  |
| Consumption                              | < 10mA                                                                                                                                                                                      |
| Insulation                               | > 1000 MOhms under 50Vdc at ambient temperature                                                                                                                                             |
| Offset                                   | 0,5Vdc                                                                                                                                                                                      |
| Sensitivity                              | 4Vdc                                                                                                                                                                                        |
| Rated Output                             | 4.5Vdc                                                                                                                                                                                      |
| Zero and sensitivity settings tolerances | ±50mV                                                                                                                                                                                       |
| Signal convention                        | For bidirectional ranges (e.g. ±1bar), the offset corresponds to the sensor signal for the minimum of the range (-1bar) and the sensitivity to the sensor signal for the full range (2bar). |



- Accuracy

|                                                   |                                                                |
|---------------------------------------------------|----------------------------------------------------------------|
| Nonlinearity and hysteresis combined for Pressure | ±0.25% FS<br>Option : ±0.1% FS                                 |
| Non repeatability for Pressure                    | ±0.02% FS typ.                                                 |
| Thermal probe                                     | PT1000 Class A : ±0.1% FS<br>Option : PT100 Class A (±0.1% FS) |

- Environmental Specifications

|                                           |                                                        |
|-------------------------------------------|--------------------------------------------------------|
| Compensated temperature range             | 0 to 60°C<br>Option : any range between -55 and +175°C |
| Operating temperature range               | -40 to +125°C<br>Option : -55 to +175°C                |
| Combined thermal zero & sensitivity shift | ±0.02%FS/°C                                            |
| Vibrations                                | 20-2000Hz, 50g max.                                    |
| Mechanical shock                          | 100g ½ sinus 1ms                                       |
| EMC protection                            | Compliant to EN61000                                   |

- Technical Specifications

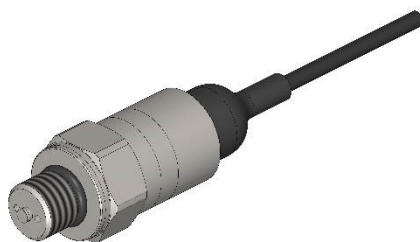
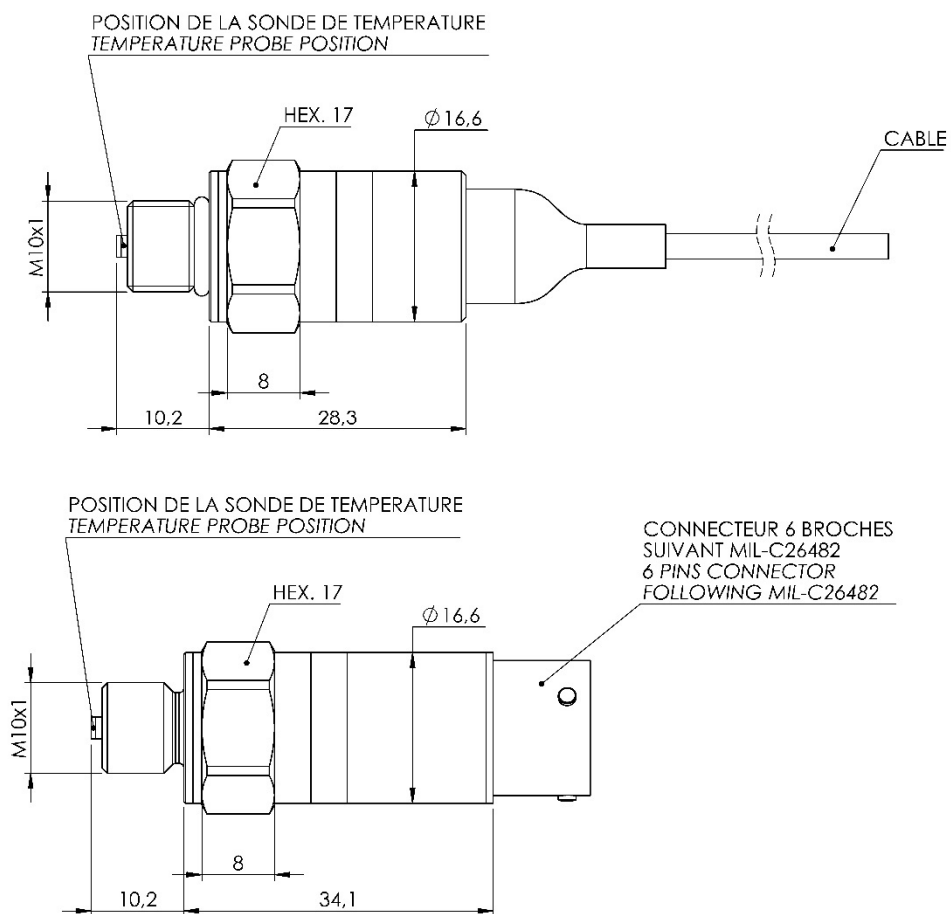
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|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Electrical connection       | AWG26, Teflon Jacketed Shielded Cable Ø3,4mm, 5 wires with additional Viton sleeve<br>Option : Hermetic MIL-C-26482 - 6 pins Receptacle |
| Mechanical connection       | M10x1-4h male ;<br>Options : 3/8-24 UNF-3A male, M8x1-6g male (for pressure ≤ 250bar)                                                   |
| Material(s) of wetted parts | Stainless Steel 316L, 17-4PH and 15-5PH                                                                                                 |
| Weight                      | 30g without cable                                                                                                                       |
| Enclosure protection        | IP65 for absolute and sealed gage versions                                                                                              |



## CODIFICATION

|                                                                                   |       |   |   |       |    |    |        |   |   |   |   |
|-----------------------------------------------------------------------------------|-------|---|---|-------|----|----|--------|---|---|---|---|
| Presssure & Temperature<br>Miniature Sensor                                       | PCM16 | 7 | S | 20bar | A  | 29 | 09S/1m | A | 1 | 1 | - |
| Output Signal                                                                     |       |   |   |       |    |    |        |   |   |   |   |
| 0.5-4.5V                                                                          |       | 7 |   |       |    |    |        |   |   |   |   |
| Material                                                                          |       |   |   |       |    |    |        |   |   |   |   |
| Stainless Steel                                                                   |       |   | S |       |    |    |        |   |   |   |   |
| Range                                                                             |       |   |   |       |    |    |        |   |   |   |   |
| Example : 20bar                                                                   |       |   |   | 20bar |    |    |        |   |   |   |   |
| Type                                                                              |       |   |   |       |    |    |        |   |   |   |   |
| Absolute                                                                          |       |   |   |       | A  |    |        |   |   |   |   |
| Gage                                                                              |       |   |   |       | G  |    |        |   |   |   |   |
| Sealed Gage (ranges > 40bar)                                                      |       |   |   |       | SG |    |        |   |   |   |   |
| Mechanical connection                                                             |       |   |   |       |    |    |        |   |   |   |   |
| M8x1-6g male (ranges ≤ 250bar)                                                    |       |   |   |       |    | 29 |        |   |   |   |   |
| M10x1-4h male                                                                     |       |   |   |       |    | 30 |        |   |   |   |   |
| 3/8-24 UNF-3A male                                                                |       |   |   |       |    | 33 |        |   |   |   |   |
| Electrical Connection                                                             |       |   |   |       |    |    |        |   |   |   |   |
| AWG26 Teflon Shielded Cable, 5 wires with Viton Sleeve (length : 1,2 or 3 meters) |       |   |   |       |    |    | 09S/1m |   |   |   |   |
| Hermetic MIL-C-26482 - 6 pins Receptacle                                          |       |   |   |       |    |    | 03     |   |   |   |   |
| Compensated temperature range                                                     |       |   |   |       |    |    |        |   |   |   |   |
| 0 to +60°C                                                                        |       |   |   |       |    |    |        | A |   |   |   |
| -40 to +125°C                                                                     |       |   |   |       |    |    |        | D |   |   |   |
| 0 to +175°C                                                                       |       |   |   |       |    |    |        | G |   |   |   |
| Nonlinearity and hysteresis combined                                              |       |   |   |       |    |    |        |   |   |   |   |
| ±0.25% FS                                                                         |       |   |   |       |    |    |        |   | 1 |   |   |
| ±0.1% FS                                                                          |       |   |   |       |    |    |        |   | 2 |   |   |
| Combined thermal zero & sensitivity shifts                                        |       |   |   |       |    |    |        |   |   |   |   |
| ±0.02% EM/°C                                                                      |       |   |   |       |    |    |        |   |   | 1 |   |
| Options                                                                           |       |   |   |       |    |    |        |   |   |   |   |
| PT100 Thermal Probe                                                               |       |   |   |       |    |    |        |   |   |   | T |

## DIMENSIONS



Dimensions : mm

## WIRING

|  | TEFLON CABLE- 5 CONDUCTORS |           |
|-----------------------------------------------------------------------------------|----------------------------|-----------|
|                                                                                   | VOLTAGE & RTD OUTPUTS      | CONDUCTOR |
|                                                                                   | + Excitation               | Red       |
|                                                                                   | + Signal (Pressure)        | Green     |
|                                                                                   | 0 Volt                     | Black     |
|                                                                                   | RTD                        | White     |
|                                                                                   | RTD                        | Blue      |
|                                                                                   | Sensor's Housing           | Shield    |

|  | HERMETIC MIL-C-26482 - 6 PINS RECEPTACLE |                     |
|------------------------------------------------------------------------------------|------------------------------------------|---------------------|
|                                                                                    | VOLTAGE & RTD OUTPUTS                    | PIN                 |
|                                                                                    | + Excitation                             | PIN A               |
|                                                                                    | + Signal (Pressure)                      | PIN B               |
|                                                                                    | 0 Volt                                   | PINS C & D          |
|                                                                                    | RTD                                      | PIN E               |
|                                                                                    | RTD                                      | PIN F               |
|                                                                                    | Sensor's Housing                         | Connector's housing |

**AGENT**

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