



Technical Note # TN04

Ms18c, PC18, PCT18 & PC30 SENSORS THERMAL COMPENSATION

Those three models are temperature compensated in the range $-25...+125^{\circ}\text{C}$

In that range, the typical residual effect of Temperature within a 100°C shift is below 1% of the FSO (Full Scale Output signal).

This performance combines the residual effect of the sensitivity shift versus Temperature, and the residual effect of the zero point drift versus Temperature.

The compensation of the sensitivity shift is obtained by the selection of materials and their heat treatment, in such a way that no individual compensation is required.

The Zero Point Drift compensation has to be performed on an individual basis, as far as the sign and the amplitude of the drift can vary from sample one to another.

The Zero Point Drift being almost linear versus Temperature, the process of compensation is simplified.

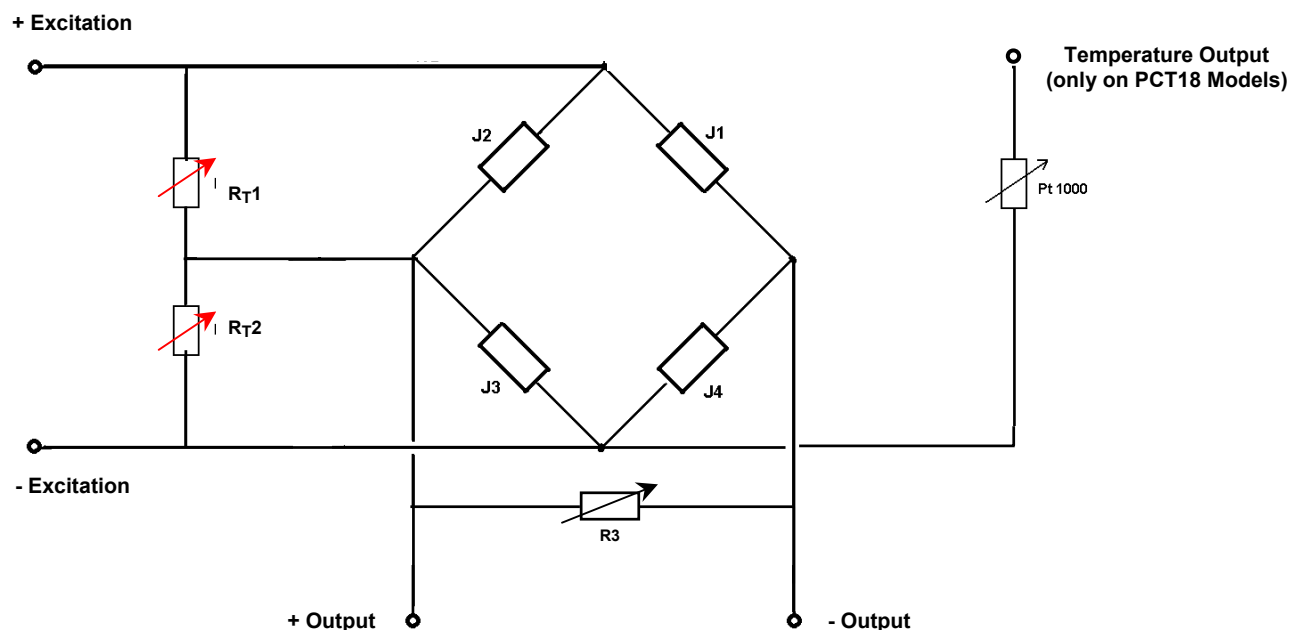
This Thermal Compensation is performed by means of an additional network of resistors which is screen-printed directly on the base plate of the sensor, whose the principle is described below:

- A voltage divider made with 2 resistors R_{T1} and R_{T2} is connected in series between the (+) and (-) Excitation Voltage, the midpoint of the voltage divider being connected to the (+) Output Signal. This midpoint of the voltage divider is connected to a resistor R_3 , connected on the (-) Output.
- Depending upon the sign and the amplitude of the initial Zero Drift before compensation, the resistors R_{T1} , R_{T2} and R_3 are individually adjusted by laser trimming in such a way that the voltage appearing at the point connected to the output bridge, is equal and inverted in sign to the voltage generated by the Zero Drift of the sensor.

Technical Note # TN04 (continued)

The schematic diagram is as follows :

ms18c, PC18, PCT18 & PC30
Sensors Thermal Compensation
- Schematic diagram -



$J1$, $J2$, $J3$ & $J4$ are the 4 strain gages measuring the deflection of the membrane versus the pressure applied.

Another resistors network, laser adjusted (not represented here) allows to perfectly balance the output of the bridge when no pressure is applied.

On the right side of the diagram, an additional Temperature Device (Pt1000 – B Class, Platinum probe) is shown, which allows an accurate temperature measurement in addition to the Temperature Compensation performed on the pressure sensor.

The ms18c, PC18 & PC30 Models are not equipped with this device. It are only pressure sensors.

The PCT18 Model contains the **Pt1000 probe**. It is a real **(P+T) Dual Sensor**.

For further information, please refer to each individual Data Sheet.

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