

# PIEZOLOR

## Ceramic piezoelectric sensors

- WEIGH-IN-MOTION (**WIM**) – TYPE **PE** SENSORS (CLASS I),
- CLASSIFICATION (**AVC**) – TYPE **PF'** SENSORS (CLASS II),
- ON SCALE – TYPE **PF'** SENSORS (CLASS II),
- DELIVERED WITH INSTALLATION KIT.



*PE sensor*



*PF' sensor*

- DYNAMIC SENSORS,
- SPEED HIGHER THAN 20 KM/H,
- CLASS I : ACCURACY  $\pm 7\%$ ,
- CLASS II : ACCURACY  $\pm 20\%$ ,
- 20 YEARS OF EXPERIENCE,
- ECM SUPPORT FOR INSTALLATION,
- MTBF > 5 YEARS (20 MILLION AXLES).



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## OPERATING PRINCIPLE

When a piezoelectric sensor of length (L) undergoes a variation of pressure  $\Delta P$  over a certain length (l), the voltage ( $\Delta V$ ) that comes forth between the core and the casing is represented by :

$$\Delta V = k \Delta P \frac{l}{L} \frac{C}{C + C_m} e^{-t/\tau} \quad \text{ou} \quad \tau = \frac{C + C_m}{X + X_m}$$

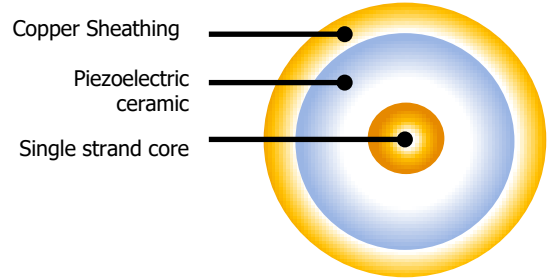
$C_m$  &  $X_m$  respectively represent the capacity and the conductance of the measuring circuit.

$\tau$  represents the time constant of this system.

$k$  represents the average coefficient to a given specific sensor.

As a result of this formula, it should be noted that :

1. The vehicle must be in motion, as the sensor is a DYNAMIC SENSOR.
2.  $\Delta P$  l/L represents the DYNAMIC WEIGHT of the axle and takes into consideration both the load and the speed factors.



## CHARACTERISTICS

- Single-strand core and copper sheathing
- Piezoelectric material : polarised ceramic
- Temperature for continuous operating : -30°C to +70°C
- Capacity per unit of length : 7550 pF/m
- Insulation resistance :  $\geq 10^{10} \Omega m$
- Sensitivity dispersion : class I :  $\leq 7\%$  ; class II :  $\leq 20\%$ .
- Piezoelectric constant :  $\cong 1V/\text{bar}$ .

## PRESENTATION

REF	PIEZO CLASS	PRESENTATION	APPLICATIONS	ROAD TYPE	INSTALLATION
PF'	II		<ul style="list-style-type: none"> <li>■ Counting,</li> <li>■ Classification,</li> <li>■ Speed.</li> </ul>	See ECM procedure 4113.	<ul style="list-style-type: none"> <li>■ Installation kit including P5G resin (see ECM procedure 4581).</li> <li>■ Installation according to ECM procedure 3303.</li> </ul>
PE	I		<ul style="list-style-type: none"> <li>■ Counting,</li> <li>■ Classification,</li> <li>■ Speed,</li> <li>■ Weigh-in-motion.</li> </ul>	See ECM procedure 4115.	<ul style="list-style-type: none"> <li>■ Installation kit including P5G resin (see ECM procedure 4581).</li> <li>■ Installation according to ECM procedure 3303.</li> </ul>

For order :

