ABOUT PELLISTORS

Pellistor type PC is designed to use in devices measuring concentrations of gas and flammable vapours, in explosimeters and systems of monitoring explosion hazard etc. Devices with PC detectors may be applicated in many industries where is the must of monitoring explosive gas concentration, e.g. mining, chemical industry, petrochemistry, municipal economy etc.

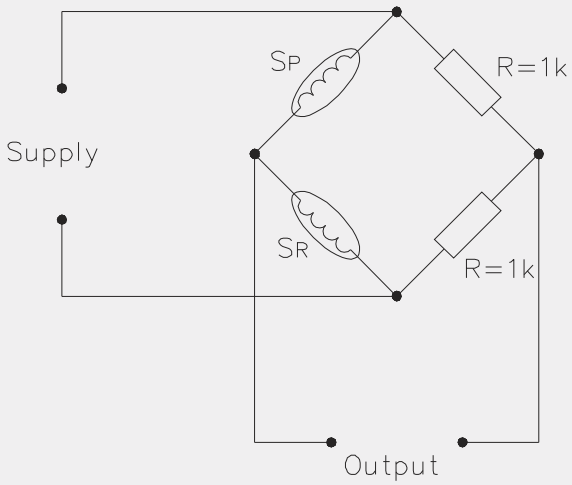
The operation of the pellistor is based on catalytic combustion (measuring range up to 100% LEL) or on heat conductivity difference between the measured and reference gases (measuring range up to 100% V/V).

The right detector's operation conditions requaire to protect it against direct exposure to poisoning compounds and inhibitors (e.g. silicones, chlorides, lead, cadmium).

The pellistors are working in Wheatstone'a bridge (as shown in Figure), powered by DC voltage.

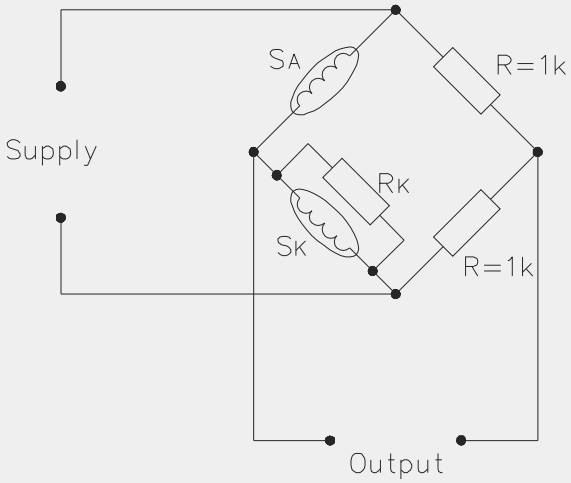
Basic Measuring Circuit

Thermoconductive pellistors
in Wheatstone'a Bridge



SP – measurement element
SR – reference element

Catalytic pellistors
in Wheatstone'a Bridge



SA – active element
SK – compensative element
RK – compensative resistor

ABOUT PELLISTORS

Catalytic detector (PC-1, PC-2, PC-31xx, PC-41xx) consists of two elements:

- S_A – active element
- S_K – compensative element

The compensative element (S_K) bypassed by compensative resistor (R_K), minimize the influence of outside factors (interfering gases, temperature, moisture, etc.) on the detector's operation.

The difference between temperature of active element on which methane is combusted against compensative element temperature generates the unbalanced bridge signal related to gas concentration.

Thermoconductive detector (PC-12, PC-22, PC-32xx, PC-42xx, PC-62x) of two elements:

- S_R – reference element
- S_P – measurement element

The difference of heat conductivity between the measured gas and the reference air hermetically closed in its housing generates the unbalanced bridge signal related to the gas concentration.

Each elements are placed in a separate housing (see data sheet each pellistors).

EXPLOATATION REMARKS!!!

1. The pellistors should work in sensing heads, diffusion or flow types, of construction fulfilling the requirements of related standards. According to the relevant Standards, the producer must guarantee the proper isolation distances between current conducting parts in the housing of the final product. In the process of head and gas flow parts designing, the choice of proper building material should be considered.

2. The optimal supply voltage is determined by the sensing head's construction.

3. The catalytic detector's operation in measuring range over 5% V/V CH_4, can cause it's damage or zero signal displacement. Additionally in some cases signals deliver ambiguous indication in low and high concentration range. It is recommended in applications to switch off detector's supplying after exceeding by the measured gases the concentration of 5% V/V CH_4 or use additional measuring bridge with thermoconductivity detectors (in range 0-100% V/V).

4. Catalytic sensors are prone to be poisoned by some substances, including inhibitors. Direct exposition to substances like silicone, sulphur or phosphor compounds, lead, cadmium, potassium, cause irreversible sensitivity drop. For these reasons it is recommended to use in sensing heads filters impregnated with activated coal. Other inhibiting substances can cause periodical sensitivity decrease. In such cases, when working again in clean air, the detectors after estimated time return to their default parameters.

5. In process of construction of the measuring head and its gas installation, it should also be paid attention on the proper choice of constructive materials, some additional materials and behavior of plastics in increased temperature.