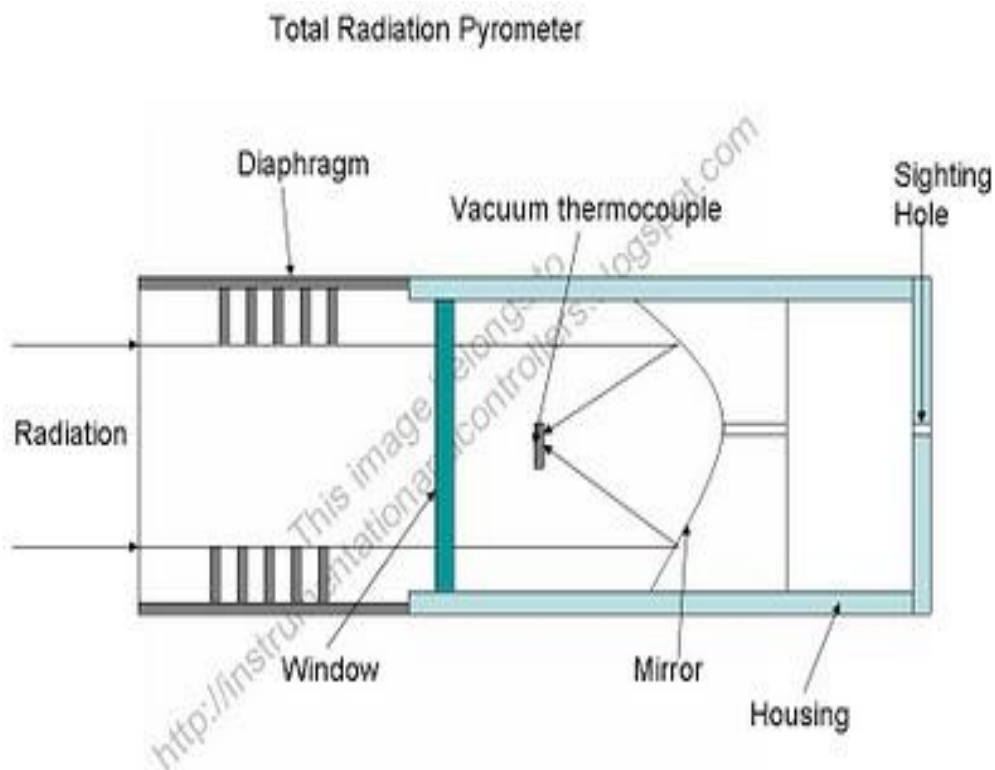


Total radiation pyrometer

The total radiation pyrometer receives all the radiation from a particular area of a hot body. The term total radiation includes both the visible and invisible radiations. It consists of a radiation receiving element and a measuring device.

The mirror type radiation pyrometer is shown in figure below. Here, the diaphragm unit along with a mirror is used to focus the radiation on a thermocouple. The distance between the mirror and the thermocouple is adjusted for proper focus.

Here, the image of the front diaphragm is focused on the thermocouple by the mirror. Therefore, the temperature measurements are independent of the distance of the target.



If there is any smoke, dust in the space between the target and transducer, it reduces the radiation. Hence negative errors. If there is any heat

sources like hot gases and flames, then the meter reading will be high.

The characteristics of this pyrometer is non-linear. It has poor sensitivity. This device is not used for temperature lower than 600 to 1200 degree Celsius. Output from this pyrometer is taken to pmmc instrument.

Advantages of Radiation pyrometer:

Used to measure very high temperature.
High output signal and moderate cost.
No need to have contact with measuring system.
Fast response.

Disadvantage of Radiation pyrometer:

Non-linear scale.
Error will occur.
Emmissivity of target material affects the measurements.

Appilication of Radiation pyrometer.

Used to measure temperature of moving target.
Used to measure temperature of a target where physical contact is impossible.
Used to measure temperature in corrosive environment.
Used to measure invisible rays from radiations.

Source:

<http://instrumentationandcontrollers.blogspot.in/2010/06/total-radiation-pyrometer.html>