Non-contact pyrometer is meant for measurement of the temperature without a direct contact through the emission of the warmed objects. Radiation pyrometer is one of the most widely-spread. Its principle is based on measurement of the whole emission energy of the heated object. The rays from the heated object are focused on the blackened plate with the help of the lens and it is warmed. The temperature of the plate turns out to be proportional to the emission energy, which, in its turn, depends on the measured temperature. A row of series-connected thermocouples are used to measure the temperature of the plate. The pyrometer consists as a rule of a telescope, measuring device and auxiliary equipment, meant to protect the telescope from the contaminants.

Infrared temperature meters appeared more than a century ago, but nowadays they have really turned into modern devices which are used in industrial processes. Infrared energy is not easy to detect for the human being, it is not much different from the regular light. The IR energy after it has been directed to a certain object or material, is partly absorbed and partly reflected. The same happens with the absorbed energy, part of it will be reflected inside, but part will be emitted again. Emissivity is not a stable magnitude, depending on the material and its structure and surface (polished, matt, shiny etc.), it may change a lot and be different at different temperatures. There are certain axioms which help to get a better understating of the interconnection between certain notions (temperature and emission), like Kirchoff's Law, Stephan Boltzmann Law, Wien's Displacement Law and Planck's Equation.