



Non contractual photo

SERVICE : 9 V POWER SUPPLY PC TYPE
COMPUTER

REFERENCE : ET1030

Four initiation experiments in the field of thermal radiation can be performed with the radiation sensor and the two radiation sources (the radiating cube and the lamp).

Educational Objectives :

Using the radiation sensor and the radiating cube :

- Introduction to thermal radiation.
- Study of the Stefan-Boltzmann law $R_{rad} = \sigma T^4$

Using the Radiation Sensor and the TD8555 Emitting Lamp :

- Study of the received power which varies inversely with the square of the distance to the source.
- Study of the Stefan-Boltzmann law at high temperature

Technical specifications :

- Radiation sensor The radiation sensor is a device perfectly suited to the quantitative study of thermal radiation because it allows precise measurements of intensity.
- radiant cube (Leslie cube): To perform quantitative experiments on thermal radiation, a precise source is as important as a precise sensor. With the radiating cube, the temperature control is achievable up to 120 ° C and the heat gain emitted by a matt black surface, a matt white surface, a polished and unpolished aluminum surface can be studied. By combining this device with the radiation sensor, quantitative experiments are feasible. Study of the radiation for the 4 different surfaces by fixing the temperature; radiation for a surface by varying the temperature (Stefan-Boltzmann law) and studying the absorption and reflection properties of the material (a glass plate is included).
- radiation source: A 12 volt incandescent lamp is an excellent source of heat radiation at high temperatures. It is used with the radiation sensor.
The advantage of the lamp for the study of Stefan's law in combination with the radiation sensor (compared to the use of the radiating cube with the sensor) is that the experiment can be performed at temperatures much higher than Room temperature.
- infra-red sensor
- acquisition interface (necessary with the sensors and the radiating cube)
- acquisition software (single-user license) (required with the sensors and the radiating cube)