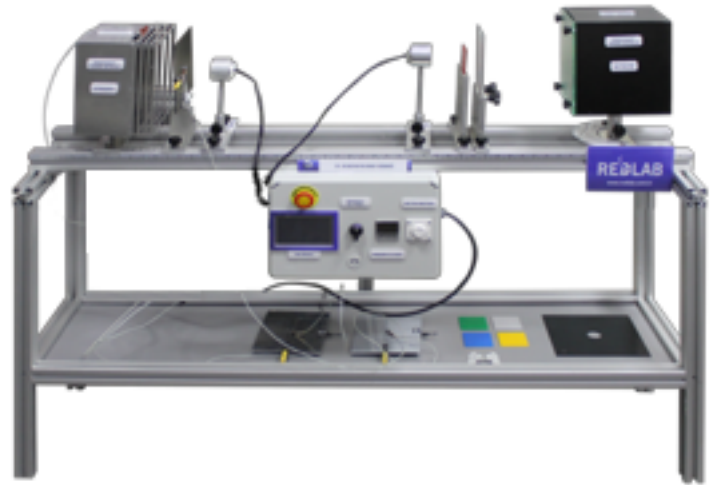


RR100 Laboratory installation for the study of heat transfer by radiation Experiment Set



The heat is transferred is in the types heat conduction, convection and radiation. In this set thermal radiation and light radiation are investigated. A thermal and light source are located on a profile bench. There are tools on the set such as black, grey and polished absorption plates, apertures and various colour filters. The radiation is measured via a thermopile and the light radiation is measured by a luxmeter which are located on the bench, too. The plate temperatures are received with thermocouples. The heat radiation flux and the plate temperatures are read on a data screen.

The radiation types on different wavelengths are researched on the set. The experiments Kirchhoff's law of radiation, the Stefan-Boltzmann law, Lambert's distance and direction law are made on the set.

Installation is intended to study the heat exchange by radiation and determine the degree of blackness of the body.

Description:

- investigation of thermal and light radiation
- influence of distance and angle of incidence
- broad range of experiments

Thermal radiation includes UV radiation, light radiation and infrared radiation.

The experimental unit contains two radiation sources: a heat radiator and a light emitter.

Various optical elements such as apertures, absorption plates or colour filters can be set up between the emitter and the detector.

All components are mounted on an optical bench.

The angles are read off the angular scale.

The optical elements are used to investigate the reflection, absorption and transmission of different materials at different wavelengths and temperatures.

The radiant power of both emitters can be adjusted. The aim of the experiments is to check optical laws: e.g. Kirchhoff's law of radiation, the Stefan-Boltzmann law, Lambert's distance and direction law.

The measured values are displayed digitally on the measuring amplifier and / or measured values are transmitted directly to a PC via USB where they can be analysed using the software included.

Experiments:

- Lambert's direction law
- Lambert's distance law
- Stefan-Boltzmann law
- Kirchhoff's laws
- radiation absorption
- radiation reflection
- radiation emission

The unit includes:

- thermal radiator and thermopile for the investigation of thermal radiation
- light source and luxmeter for the investigation of illuminance
- absorption plate and reflection plate with thermocouples for the investigation of Kirchhoff's laws
- adjustable radiant power of thermal radiator and light source
- 3 colour filters with holder (red, green, infrared), slit diaphragm
- luxmeter for measuring illuminance
- thermocouple for measuring the temperature
- thermopile for measuring radiant power
- software

Technical data:

Thermal radiator

- output: not less 400W at 230V,
- max. achievable temperature: not less 300°C
- radiant area,

Light source

- halogen lamp
- range of rotation on both sides: 0... 90°

Optical elements to insert

- slit diaphragm
- 3 colour filters: red, green, infrared
- absorption plate and reflection plate with thermocouple

Measuring ranges

- illuminance: 0...1000 lux \pm 5%
- temperature: 2x 0...200°C
- radiant power: 0...1000W/m² \pm 5%

Operating manual in Uzbek and Russian

The equipment comply with applicable standards.

The equipment is convenient in operation and ensure the safety of maintenance personnel during operation.

Operating terms: Indoors only at ambient temperatures +10 to +30 ° C; relative humidity up to 80% (non-condensing).