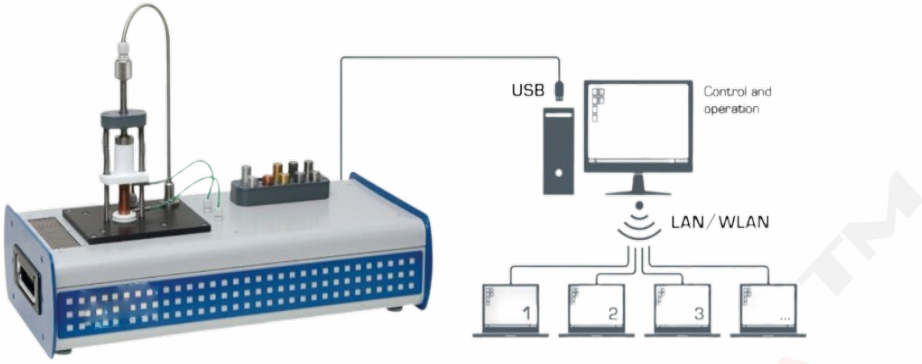

Specification:

- Thermal radiation phenomena trainer used in demonstrating the laws of radiant transfer from heat and light sources.
- Thermal radiation phenomena trainer contains two radiation sources: a heat radiator and a light emitter. The aim of the apparatus experiments is to check optical laws: e.g., Kirchhoff's law of radiation, the Stefan-Boltzmann law, Lambert's distance and direction law.
- The apparatus includes thermal radiator and thermopile that used in investigation of thermal radiation
- The apparatus includes luxmeter with photodiode that used in recording the light radiation.
- The apparatus includes various optical elements such as apertures, absorption plates or colour filters can be set up between the emitter and the detector. These elements are mounted on an optical bench.
- The distance between the optical elements can be read from a scale along the optical bench.
- A moveable thermopile measures the heat radiation from the heat source at varying distances.
- Luxmeter, thermopile and light emitter can be rotated to study how the angle of incidence affects the radiation intensity.
- The apparatus contains angular scale to read off the angles.
- The heat source uses a variable low-voltage electric heater on a flat plate, creating a black body heat source of variable temperature.
- The apparatus includes thermocouple to measure the heat source temperature.
- A clear, multiline digital display on the control box shows temperatures and light or heat radiation.
- The measured values are transmitted directly to a PC via USB where they can be analysed using the software included

Experiments:-

Heat

- Inverse square law (or Lambert's distance law/area law): demonstrating radiation is inversely proportional to distance squared.
- Stefan-Boltzmann law: demonstrating the relationship between radiation and source temperature.
- Kirchhoff 's law: demonstrating that a body with good emissivity also has good absorptivity.
- Area factor, demonstrating that radiation transfer depends on the exposed area of the

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.

radiant source.

Light

- Inverse square law (or Lambert's distance law/area law): demonstrating radiation is inversely proportional to distance squared.
- Lambert's direction law (or cosine law): demonstrating that radiation is proportional to the cosine of the angle between the emitter and the receiver
- Transmittance and absorbance: demonstrating that optical filters can reduce light intensity.

Technical Data:-

Thermal radiator

- Material: AlMg3, black anodized
- Output: 400W at 230V, 340W at 120V
- Max. achievable temperature: 300°C
- Radiant area, L x W: 200x200mm

Light source as light emitter

Halogen lamp

- Output: 50W
- Luminous flux: 1185lm
- Colour temperature: 2950K
- Range of rotation on both sides: 0… 90°

Optional illuminated surface

- Diffusing lens, L x W: 193x193mm or
- Orifice plate, Ø 25mm

Optical elements to insert

- Slit diaphragm.
- 3 colour filters: red, green, infrared.
- Absorption plate and reflection plate with thermocouple type K, matt black lacquered.

Measuring ranges

- Illuminance: 0…1000 lux
- Temperature: 2x 0…200°C
- Radiant power: 0…1000W/m2

Supply voltage

- 1 phase, 220V, 50Hz

Scope of Delivery:-

- Thermal radiation phenomena trainer (HT-005).
- Hard copy of the user manual.
- Photon software + USB cable.

Required for Operation:-

- Laboratory PC.

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