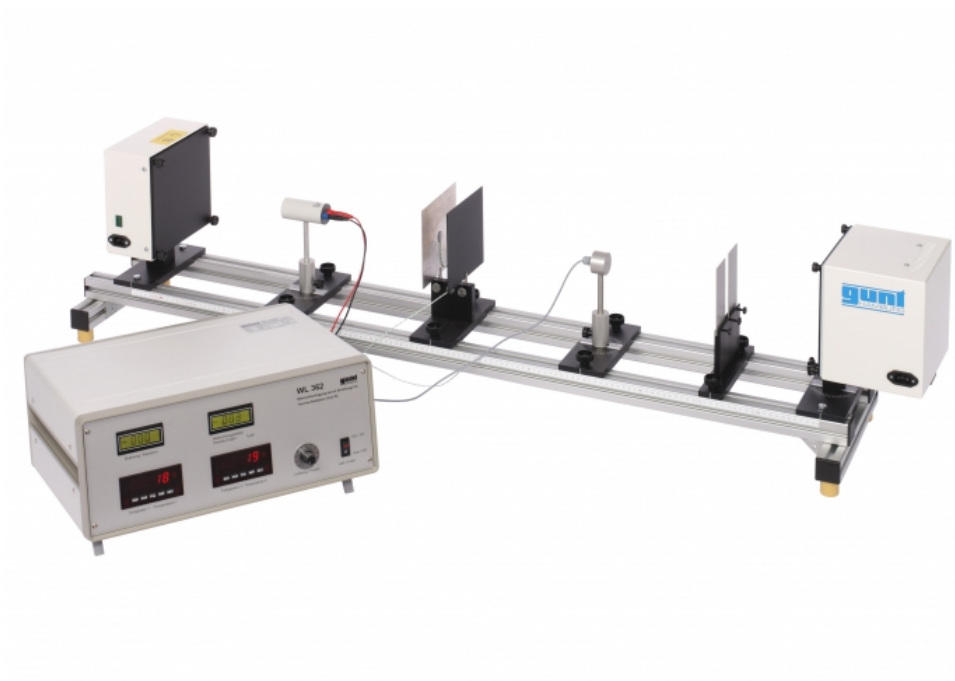
WL 362
Thermal radiation unit



Description

- **experimental unit for investigating thermal and visible radiation**
- **wide range of experiments**
- **user-friendly software with options for saving, printing and creating diagrams**

The experimental unit contains a blackbody emitter with a thermopile for the investigation of thermal radiation, a light source with luxmeter for illuminance measurements, and absorption plates with thermocouples for the investigation of Kirchhoff's laws. The intensity of thermal and visible radiation can be adjusted. Colour filters and apertures extend the range of experiments.

The measured values are displayed digitally on the measuring unit. At the same time, the measured values can also be transmitted directly to a PC via USB. The data acquisition software is included.

Learning objectives/experiments

- Lambert's cosine law
- inverse-square distance law (Lambert)
- Stefan-Boltzmann constant
- Kirchhoff's laws
  - absorptivity
  - reflectivity
  - emissivity

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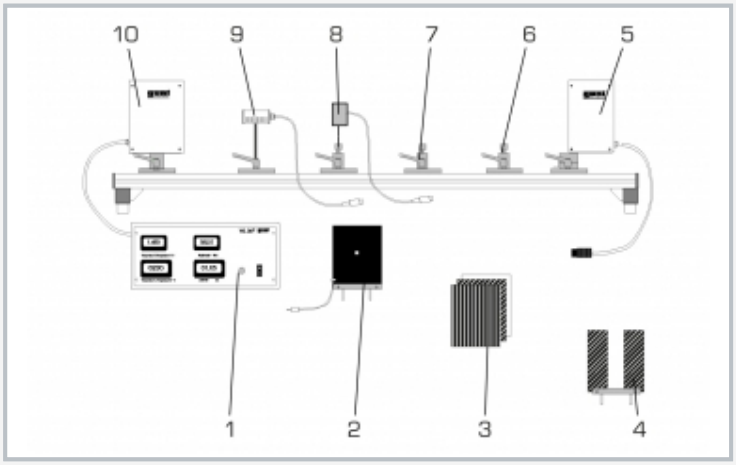
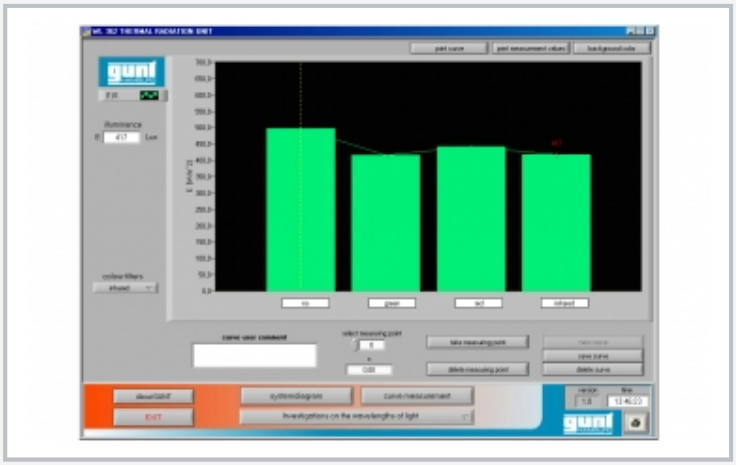


1 measuring amplifier, 2 absorption plate with temperature measuring point, 3 colour filters (red, green, infrared), 4 aperture, 5 rotating light source, 6 holder for colour filter / aperture, 7 holder for absorption plate, 8 luxmeter, 9 thermopile, 10 thermal radiator



Software screenshot: investigations on the wavelength of light

Specification

[1] investigating thermal and visible radiation
[2] blackbody emitter with thermopile to investigate thermal radiation
[3] white light source with luxmeter to investigate visible radiation
[4] absorption plate and reflection plate fitted with thermocouples to investigate Kirchhoff's laws
[5] intensity of thermal radiator and light source adjustable
[6] 3 colour filters with holder (red, green, infrared), aperture
[7] luxmeter to measure the illuminance
[8] thermocouples to measure the temperature
[9] thermopile to measure the radiation capacity
[10] GUNT software for data acquisition via USB under Windows 7, 8.1, 10

Technical data

Thermal radiator
- power output: 400W
- max. temperature that can be reached: 300°C
- radiation surface area, LxW: 200x200mm

Light source
- power output of light bulb: 42W
- angle of rotation, both sides: 0...90°
- illuminated area
- ground glass, LxW: 193x193mm
- aperture, diameter: 25mm

Measuring ranges
- illuminance: 0...1000 Lux
- temperature: 2x 0...200°C
- radiation capacity: 0...1000W/m^2

230V, 50Hz, 1 phase
230V, 60Hz, 1 phase
120V, 60Hz, 1 phase
LxWxH: 1460x310x390mm (experimental setup)
LxWxH: 420x400x170mm (measuring amplifier)
Weight: approx. 30kg

Required for operation

PC with Windows recommended

Scope of delivery

1 frame, 1 measuring amplifier
1 thermal radiator, 1 light source
1 luxmeter, 1 thermopile
2x absorption plate
2x reflection plate
3 colour filters with holder, 2x aperture
1 set of connecting cables
1 GUNT software CD + USB cable
1 manual

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Optional accessories

020.30009	WP 300.09	Laboratory trolley