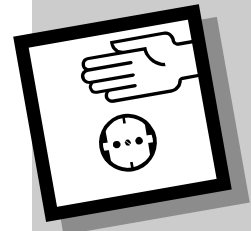
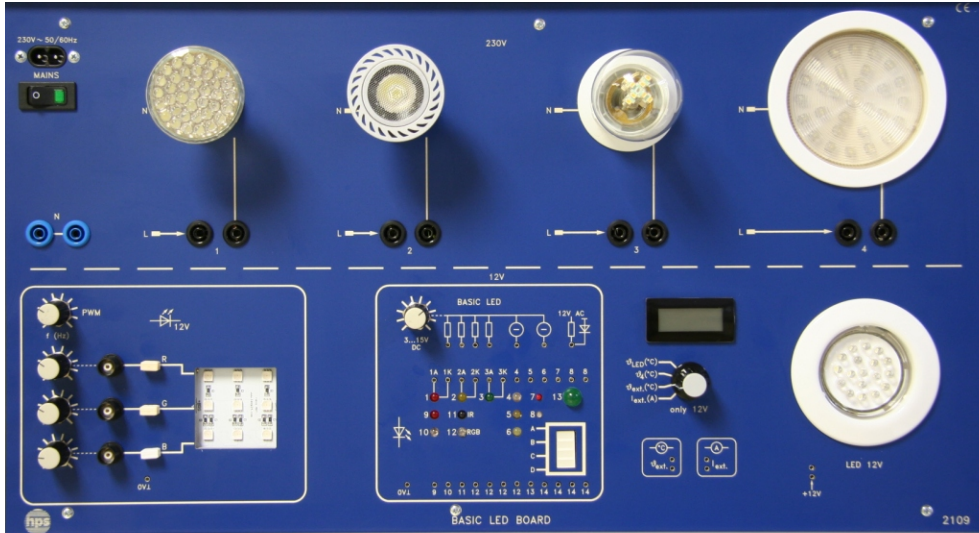


# Installation and Lighting Technology



## Basic LED Board

Type 2109



Basic LED Board  
(Type 2109)

### Technical Description

This training system can be used to investigate the basic of the light emitting diodes: technology, efficiency, operational parameters and color characteristics of different LED types.

The board is divided into two fields.

The 230 V field consists of the standardized bulb holders of types GU10, GU 5.3, GX53 and E 27 and grants compatibility with the most commonly used and commercially available LED bulbs.

The 12 V field includes manually adjustable LED matrix with PWM control module, different types of single diodes and the MR11 holder for the 12 V bulbs. Furthermore the board includes a built-in 12 V measuring device to use during experiments.

Additionally a set of plastic screens enables studying the optical characteristics of the LED lights.

### Learning Objectives / Experiments

- LED specific light properties like diffusion, color temperature etc.
- Physical characteristics of LEDs, e.g. power consumption, heat generation
- Differences between various LED types
- Comparison to the other light sources
- Controlling the RGB LEDs with pulse-width modulation

### Features

- Built-in 12 V measuring device (power, temperature)
- All power measurements also possible with traditional multimeter
- Exchangeable bulbs
- 4 mm safety jacks for 230 V and 2 mm low voltage jacks
- BNC connectors for external oscilloscope

- Practice-oriented measurements with customary devices
- Can be used with commercially available LED Lamps
- Exchangeable 230V and 12V LED bulbs
- Integrated power supply
- PWM module for controlling RGB LEDs

