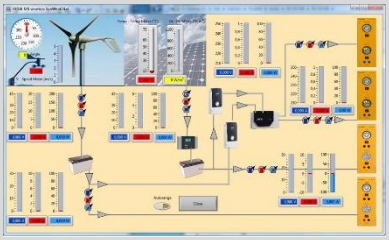
RENEWABLE ENERGIES

SOLAR/WIND ENERGY TRAINER WITH BATTERY CHARGE REGULATOR AND BATTERY

DL SUNWIND-OG

Modular trainer for the theoretical and practical study of the electrical installations with photovoltaic solar energy and wind energy.
With the solar / wind trainer it is possible to perform experiments to determine the characteristics of a wind generator and a photovoltaic panel and study their off-grid operation with a battery charge regulator.



Complete with connecting cables, experiment manual and **software for data acquisition and processing.**

DIDACTIC EXPERIENCE

STUDY OF PHOVOLTAIC SOLAR PANEL

- Measuring solar radiation: Changing the inclination and azimuth of the solar panel
- Investigating the PV module response to shadow formation
- Recording the characteristics of the solar modules:
  - Solar Panel Voltage-Irradiation Curve
  - Solar Panel Current-Irradiation Curve (calculating the inner resistance of the solar panel)
  - Obtaining the solar panel current-voltage curve
  - Obtaining the solar panel current-power curve
  - Measurement of the voltage and current of the photovoltaic module with overload

TECHNICAL SPECIFICATIONS

- Electronic charge regulation module, with LCD display, MPPT tracking and energy monitor
- Battery protection module
- Rheostat module
- DC load module. It includes a 20W dichroic lamp and 3W LED lamps, with independent switches.
- Inclinable photovoltaic panel, approx. 90W, 12V, complete with a cell for measuring the solar irradiation and a temperature sensor.
- Motor/generator group for the simulation of a wind turbine. Composed of a brushless motor and a DC permanent magnet generator.
- Control module for brushless motor drive
- Anemometer
- Off-grid inverter module
- AC load module. It includes a dichroic lamp and LED lamps, with independent switches.

RENEWABLE ENERGIES

STUDY OF OFF-GRID SOLAR SYSTEM

- Measuring the generated power of a PV system and battery charging
- Using Solar Panel and Battery to supply a DC Load
- Design and testing of a standalone PV system in direct storage operation and 230V AC

STUDY OF WIND TURBINE

- Identification of wind turbine components
- Operating the Wind Turbine Breaker
- Calculating wind power

STUDY OF OFF-GRID WIND SYSTEM

- Dimensioning of an off-grid wind system.
- Battery regulating and charging
- Supplying DC load with wind power stored in a battery
- Supplying AC load with wind power and a battery.
- Calculating the system autonomy with different loads

- Multifunction measurement module: solar irradiation, solar panel temperature, 2 DC power meters and 1 AC power meter.
- Multifunction measurement module for wind applications: It includes four separate instruments to measure all fundamental parameters for the study of a wind-system.
- 100Ah battery
- 27Ah battery.
- Three level frame
- Wind turbine charge controller with brake system.

OPTION:

DL SIMSUN - Sun simulator consisting of halogen lamps to provide energy to the photovoltaic module for indoor use