Product datasheet (en)

Version:	1405_26.07.2016

Photo:	Name:
	leXsolar-Wind Ready-to-go
	Item number:
	1405
	Youtube link:
	http://www.youtube.com/watch?v=mMdZXKPKh6Y

Area of application:	Dimensions (cm x cm x cm):
Physics	64x37x16,5

Weight (kg):	User group:
5,7	Middle School / Junior High School Highschool / Secondary School Industrial Customers

Key facts:

Wind energy experiments for all ages
Understanding wind energy: from physics to application
Contains the innovative leXsolar-wind rotor set
Delivered in a stable aluminum case with all accessories

List of components:

1 x 1100-19 leXsolar-Base unit Large
1 x 1100-22 Resistor module
1 x 1100-23 Potentiometer module
1 x 1100-25 Buzzer module
1 x 1100-26 Light bulb module
1 x 1100-27 Motor module without gear
1 x 1100-28 Color discs - Set 1
1 x 1400-01 leXsolar-Savonius rotor modulw
1 x 1400-19 Wind machine
1 x 1400-22 Wind turbine module
1 x 1400-07 Capacitor module 220 mF, 2.5V
1 x 1400-08 LED-module 2mA, red
1 x 1400-12 leXsolar-Wind rotor set
1 x 1400-16 stator for anemometer
1 x 9100-05 PowerModule
2 x L2-06-011 Digital multimeter
1 x L2-06-012 Test lead black 25 cm
1 x L2-06-013 Test lead red 25 cm
2 x L2-06-014 Test lead black 50 cm
2 x L2-06-015 Test lead red 50 cm
1 x L2-06-027 Anemometer
1 x L3-01-024 Aluminum case "Wind-Ready to go"
1 x L3-01-050 Insert Wind Ready-to-go
1 x L3-03-133 Layout diagram 1405 Wind Ready-to-go
1 x L3-03-258 Info sheet initial startup

Extras needed:

No extras needed, all included.

Extras available:

L3-03-073 Intructions manual leXsolar-Wind Ready-to-go

Description:

True to the tradition of the Ready-to-go series, this system
enables the maximum number of experiments without the need for
additional accessories. It comes in a the sturdy aluminum case and is location-independent. All needed equipment and the "Anemometer" expansion are already included.
With the leXsolar Wind Ready-to-go, you will be able to answer any questions you may have concerning the basic concepts of using
wind energy.
The leXsolar Wind Ready-to-go is also suitable for in-house workshops, for example, for use by sales representatives.

Experiments:

Influence of the wind speed on a wind turbine
Start-up wind speed at a wind turbine
Comparison of the start-up wind speed of a Savonius and a three-blade rotor
Change the turbine voltage by connecting a consumer
Examine the wind speed behind the rotor
Energy balance sheet at a wind turbine
Calculating the efficiency of a wind turbine
Storing electric energy
Energy conversion in a wind turbine
Examine color wheels using a wind turbine
Comparison of a Savonius rotor and a three-blade rotor
Comparison of two, three and four-blade rotors
Characteristic curves of a wind turbine
Influence of the wind direction
Influence of the rotor blade pitch
Influence of the rotor blade pitch on the start up speed of a wind turbine
Influence of the blade shape

Specifications of components:

1100-19 leXsolar-Base unit Large:
Main board for the leXsolar plug-in system with 3 slots
Grid-dimension of the plugs: 70 mm
Enables series and parallel connectsion of the modules
Changing between series and parallel connection by turning the modules
Equipped with 4 additional 4 mm jacks for connecting measuring lines

1100-22 Resistor module:
Plug-in module with 33 Ohm resistor
Tolerance: 5 %
Maximum power: 2 W
Layout: plug-in module with 4 mm jacks
Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1100-23 Potentiometer module:
Plug-in module with adjustable resistance
Resistance continuously adjustable: 0 - 1.1 kOhm
Maximum current: 1A
Module contains two potentiometers connected in seris (1 x 100 Ohm and 1 x 1 kOhm)
Allows an exact adjustment of the resistance while having a large resistance range
Layout: plug-in module with 4mm jacks
Grid-dimension of the jacks: 70mm
Module size: 85mmx85mm

1100-25 Buzzer module:
Plug-in Module with piezo buzzer
Pulse tone buzzer
Initial voltage: 0.7 V

Initial current: 0.2 mA
Layout: plug-in module with 4 mm jacks
Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1100-26 Light bulb module:
Plug-in module with micro bulb
Initial voltage: 0.9 V
Initial current: 25 mA
Maximum voltage: 6 V
Equipped with automatic fuse protecting from overvoltage
Layout: plug-in module with 4 mm jacks
Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1100-27 Motor module without gear:
Plug-in module with DC-motor
Initial current: 20 mA
Initial voltage: 0.35 V
Equipped with automatic fuse protecting from overvoltage
Layout: plug-in module with 4 mm jacks
Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1100-28 Color discs - Set 1:
Color discs for demonstration of color mixture and optical illusions
Contains a mount with 2 clips for attaching the discs
Mount fits axles of 2mm diameter
Included color discs:
Red-green-blue
Red-blue
Red-green
blue-green
Hue disc
Optical illusion: relief
Optical illusion: color formation
Stroboscope disc

1400-01 leXsolar-Savonius rotor modulw:
Savonius wind turbine
Starting wind speed: ca. 3.3 m/s
Nominal voltage (at a wind speed of 5 m/s): 0.4 V
Dimensions of the rotor: h=60 mm, d=80 mm
Layout: plug-in module with 4 mm jacks
Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1400-19 Wind machine:

1400-22 Wind turbine module:
Wind turbine module for attaching different types of rotors
Generator: maximum 6 V DC
Layout: plug-in module with 4 mm jacks

Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1400-07 Capacitor module 220 mF, 2.5V:
Capacitor plug-in module
Capacity: 220 mF
Voltage: 2.5 V
Equipped with automatic fuse protecting from overvoltage
Layout: plug-in module with 4 mm jacks
Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1400-08 LED-module 2mA, red:
LED plug-in module
Red LED (maximum emission at 697 nm)
Mimum voltage: 1.7 V
Equipped with automatic fuse protecting from overvoltage
Layout: plug-in module with 4 mm jacks
Grid-dimension of the jacks: 70 mm
Module size: 85 mm x 85 mm

1400-12 leXsolar-Wind rotor set:
Set of rotor blades and hubs to set up different wind turbines
4 rotor blades with optimized profile
4 rotor blades with flat rectangular profile
5 hubs for setting up 3-blade rotors with pitches 20°, 25°, 30°, 50° and 90°
1 hub for setting up 4-blate rotor with pitch of 25°
1 Cap for 3-blade rotor and 1 cap for 4-blade rotor
Allows setting up 24 different wind turbines
Easy assembling and disassembling without tools

1400-16 stator for anemometer:

9100-05 PowerModule:
The PowerModule is a compact, robust and easy-to-use power supply for experiments. The voltage can be varied incrementally in 0.5V steps from 0 to 12V. It supplies up to 24W output power!
With the acoustic feedback during operation and the voltage indicator by LEDs it is simple and intuitive for the user. With only 70g it is the most lightweigt power supply of its power class. Due to the design as leXsolar plug-in module it is fully compatible with all leXsolar experiments. However, it can also be used in other setups with standard 4mm-connectors.

With software control* continuous variable voltages - even time-dependent - can be realized.

Technical data:

Output voltage 0-12V DC
Maximum current 2A
Maximum output power 24W
Automatic overcurrent detection
Voltage variation in 0.5V steps (manually) or continuous (with software* via USB-Connect* or Wireless-Connect**)
Accuracy: +-0.15V

Contacts: 4mm standard connectors and compatible to leXsolar main board
Input voltage 110-230V AC 50-60Hz
Adaptors for all common sockets included
Weight: 70g (+180g included wall power supply)

*available from October 2015
** available from 2016

L2-06-011 Digital multimeter:
TÜV/GS-approved Pocket size mini Multimeter.

L2-06-012 Test lead black 25 cm:
The black test lead is used for the electrical connection of the modules. The cable is directly plugged into the base plate or alternatively directly into the plug connection of the modules. The cables have two different colors to distinguish between the positive and the negative pole. The black cables are plugged into the negative pole.

L2-06-013 Test lead red 25 cm:
The red test lead is used for the electrical connection of the modules. The cable is directly plugged into the base plate or alternatively directly into the plug connection of the modules. The cables have two different colors to distinguish between the positive and the negative pole. The red cables are plugged into the positive pole.

L2-06-014 Test lead black 50 cm:
The black test lead is used for the electrical connection of the modules. The cable is directly plugged into the base plate or alternatively directly into the plug connection of the modules. The cables have two different colors to distinguish between the positive and the negative pole. The black cables are plugged into the negative pole.

L2-06-015 Test lead red 50 cm:
The red test lead is used for the electrical connection of the modules. The cable is directly plugged into the base plate or alternatively directly into the plug connection of the modules. The cables have two different colors to distinguish between the positive and the negative pole. The red cables are plugged into the positive pole.

L2-06-027 Anemometer:

L3-01-024 Aluminum case "Wind-Ready to go":

L3-01-050 Insert Wind Ready-to-go:

L3-03-133 Layout diagram 1405 Wind Ready-to-go:

L3-03-258 Info sheet initial startup:

Specifications extras needed:

No extras needed, all inclusive.

Specifications extras available:

L3-03-073 Intructions manual leXsolar-Wind Ready-to-go:
Every leXsolar-training kit comes with the leXsolar-CD. There you can find all the students and teacher manuals as pdf and as word file. Of course you can order them as printed version as well.