Product datasheet (en)

Version:	1710_23.06.2016

Photo:	Name:
	leXsolar-BioEnergy Ready-to-go

Item number:
1710

Youtube link:

Area of application:	Dimensions (cm x cm x cm)

Weight (kg):	User group:
14,6	

Key facts:

List of components:

1 x 1100-27 Motor module without gear
1 x 1218-02 PEM-Fuel cell module
1 x 1602-01 leXsolar-Base unit small
2 x 1700-05 expanded clay pebbles
1 x 1700-06 fertilizer
1 x 1700-07 compost catalyst

1 x 1700-08 composter
1 x 1700-09 gas collecting container
1 x 1700-10 burner
1 x 1700-11 tripod plant lighting
1 x 1700-12 sprout box
1 x 1700-13 box 6 L
1 x 1700-14 tripod
1 x 1700-15 seed set
1 x 1700-16 rubber plug with tube
1 x 1700-17 ID tags
1 x 1710-01 aluminum case 1710 silver
1 x 1710-02 aluminum case 1710 blue
2 x L2-01-120 pot holder BioEnergy
1 x L2-02-017 Propeller
1,5 x L2-02-046 silicone tube 4mm
1 x L2-02-083 Y-switch 4mm
2 x L2-04-194 plant light
1 x L2-05-141 hose clamp
1 x L2-06-012 Test lead black 25 cm
1 x L2-06-013 Test lead red 25 cm
2 x L2-06-033 Short-circuit plug
1 x L2-06-075 Erlenmeyer flask 1000 ml
2 x L2-06-185 timer
1 x L2-06-186 air pump
2 x L2-06-187 aeration stone
50 x L2-06-188 net cup planter
1 x L2-06-189 ec meter
1 x L2-06-190 temperature logger
1 x L2-06-191 weight
1 x L2-06-192 tweezers
24 x L2-06-199 stopper red
1 x L2-06-200 nebulizer
2 x L3-01-012 plastic box Gratnells 75 mm deep
1 x L3-01-210 Insert BioEnergy Rtg 1710
2 x L3-03-258 Info sheet initial startup
1 x L3-03-274 Layout diagram 1710 BioEnergy Ready-to-go

Extras needed:

No extras needed, all included.

Extras available:

No extras available.

Description:

The extensive experiment system leXsolar-BioEnergy Ready-to-go enables you to reconstruct and understand the whole biomass cycle without any additional equipment. A cultivation box and hydroculture allow the observation of the sprouting and growth of

plants. Thereby the water and nutrient consumption can be analyzed in the different growth phases. Different experiments then show the aerobic as well as the anaerobic degradation of the biomass in a compost or biogas processes. Thus allows the exploration of the energetic use of biomass.

Experiments:

germination of plant seeds
plant growth in a hydroculture
consumption of water and nutrients
aerobic degradation of biomass in a compost
anaerobic degradation of biomass to form hydrogen
anaerobic degradation of biomass to form methane

Specifications of components

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

1218-02 PEM-Fuel Cell Module:
high perfomance PEM fuel cell
converts hydrogen and oxygen into electricity and water

1602-01 leXsolar-Base Unit small:
Main board für the leXsolar plug-in system wirht 2 slots
Equipped with 4 additional 4 mm jacks for connection of measuring lines

1700-05 Expanded Clay Pebbles:
The expanded clay pebbles serve as substrat in the BioEnergy hydroculture.
reusable after washing

1700-06 Fertilizer:
plant nutrients for BioEnergy hydroculture

1700-07 Compost Catalyst:
bio-active compost device
starts and optimezes thermal fermentation
pure natural substances

1700-08 Composter:
2 piece compost container to plug together
The transparent case allows optical observation of all the processes and changes.
The base plate with stands and holes allows the drain of redundant fluids as well as an adequate ventilation of the compost.

1700-09 Gas Collecting Container:
The gas collection container allows collecting the gases methane and hydrogen, that are produced during the biogas processes.
A silicon tube and a ball valve, mounted to the container, enable the connection of the burner and therefore suppling it with gas.
The imprinted scale helps to observe the speed of the gas building process depending on different parameters.

1700-10 Burner:
The burner helps to burn the gases, that have been produces in the biogas processes.
The gas, collected in the gas collecting container, is fed over a silicon tube and a ball valve.

1700-11 Tripod Plant Lighting:
The plant lights for lighting the hydrocultures are mounted on the tripod.

1700-12 Sprout Box:
The sprout box serves for sprouting of the plant seeds.
The plant seeds can be put in to 49 individual compartments for controlled sprouting.
Holes in the comparments ensure drain of water and therefore mold formation of the plant seeds and seedlings.

1700-13 Box 6 L:
Togehter with the sprout box and the nebulizer this box serves for the first step of biomass formation, the sprouting of the plant seeds.
Holes in the lid of the box assure a sufficient ventilation of the plant seeds and seedlings.

1700-14 Tripod:
The tripod serves as a stand for the gas collecting container.

1700-15 Seed Set:
The seed set contains the plant seeds for cultivation of the biomass.
It contains the plants corn, wheat, sugar beet, radish and salad.

1700-16 Rubber Plug with Tube:
The rubber plug ensures hte airtight sealing of the Erlenmeyer flask.
The formed biogas is piped into the gas collecting container over the tube on the plug.

1700-17 ID Tags:
for numbering the plants

1710-01 aluminum case 1710 silver:

1710-02 aluminum case 1710 blue:

L2-01-120 Pot Holder BioEnergy:
The pot holder holds the net cup planters in the hydroculture and provides space for 24 cups.

L2-02-017 Propeller:

L2-02-046 Silicone Tube 4mm:
The tube serves for transportation of gases and liquids.

L2-02-083 Y-Switch 4mm:
The Y-switch allows branching from one to two tubes.

L2-04-194 Plant Light:
The plant light guarantees an optimal lighting of the plants with light from white, blue and red wavelengths.

L2-05-141 Hose Clamp:
The hose clamp allows closing or rather narrowing of tubes.

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.

L2-06-033 Short-circuit Plug:
The short-circuit plugs allow the connection of both slots of the small leXsolar base unit.

L2-06-075 Erlenmeyer Flask 1000 ml:
Erlenmeyer flask 1000 ml with joint NS 29/32
Borosilicate glass

L2-06-185 Timer:
The timer allows individual temporal setting of switching on and off of the connected electronical devices.
minimal selectable time interval: 30 min

L2-06-186 Air Pump:

L2-06-187 Aeration Stone:
The aeration stone induces air into the hydroculture to avoid growth of algae.

L2-06-188 Net Cup Planter:
Seedlings and plants can be planted in the net cup holders with help of the expanded clay pebbles.

L2-06-189 EC Meter:
This instrument measures the electrical conductivity of fluids.
This physical scale indicates a material's ability to conduct an electric current.

L2-06-190 Temperature Logger:
This device records temperature values in individually selectable time intervals.
The recorded data can be read out on pc oder an USB interface and the related software.

temperature measuring range: -30 °C - +60 °C, for optional external sensor: -40 °C - +85 °C
temperatur unit: °C or °F optinal
accuracy: -20 °C - +40 °C: +/- 0,5 °C, others: +/- 1 °C
resolution: 0,1 °C
record capacity: 160000 points (MAX)
record interval: 10 s - 24 hour adjustable

L2-06-191 Weight:
device for determining the weight of an object
tara feature
max. 5000g in 1,0 g steps

L2-06-192 Tweezers:
tool for grabbing small objects
synthetic material

L2-06-199 Stopper red:
for sealing the free spots in the hydroculture, if no net cup planters are applied
prevents entering of light to prevent growth of algae

L2-06-200 Nebulizer:
The nebulizer allows moistening the plants seeds in the sprout box to start the germination of the seeds.

L3-01-012 Plastic Box Gratnells 75 mm deep:

L3-01-210 Insert BioEnergy Rtg 1710:

L3-03-258 Info sheet initial startup:

L3-03-274 Layout diagram 1710 BioEnergy Ready-to-go:

Specifications extras needed:

No extras needed, all inclusive.

Specifications extras available:

No extras available.