

WWF Solar GmbH  
Mühlenstraße  
D-16227 Eberswalde

Tel. +49 / (0)3334 / 55-2902

Fax +49 / (0)3334 / 55-2903

Mobil +49 / (0)162 / 96 99 716

skype ID wwfsolar

rene.koenig@wwfsolar.de

www.wwfsolar.de

Our Capability in:

# Solar Street Lighting



Specialists in design,  
engineering and installation of  
solar-street-lighting-systems

# Contents

## The PV - Street lamp with SOX or LED lamp

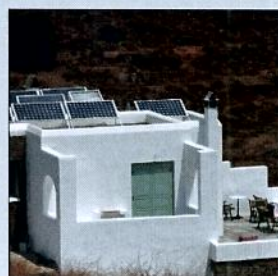
### These Street lamps contain:

- Solar Module
  - Solar Module  
70Wp - 280Wp 12V or 24V monocrystalline PV module
  - Module Bracket  
Top Pole Mounting Structure with box for battery and electronic
- Lamp
  - Lamp SOX E 18 / 26 / 36 / 66 or Lamp LED 20 / 24 / 30
  - Ballast for SOX Lamp 18W - 66W 12V or 24V or LED Lamp 20W - 30W 12V
  - Lamp-holder for SOX Lamps 18-36 or 66 or Lamp-holder for LED Lamps 20-30
  - Lamp-Bracket for street lamps diameter of 60 - length 1 meter
- Pole
  - Galvanized cylindrical black-painted pole 7 metres over ground (H tot 7,8 metres, diameter =102 mm/168mm)
- Electronics
  - Charge Controller  
SPB-L box MPPT tracking system charge controller 10A 12V or 24V Basic, with radio control or with GSM control
  - Battery - 50Ah - 200Ah 12Vor 24V mainfree Gel or AGM Battery
  - Cable Kit

Through our experience and the expertise of our associated companies we are able to give technical advise to our customers on design, engineering and installation of small and medium sized photovoltaic systems.

## System Description

SPB-LB solar equipment for public lighting with MPPT control algorithm for self-working Flux reduction foe SOX-E lamps. Microcontroller design and SMT technology, Mosfet components up 10A panel current, Implemented blocking diode, Implemented light sensor control (with panel), Battery temperature compensation, Low battery control, Overtemperature and overload protection, Lamp-bracket with connection Ø 102, Stainless steel (INOX) top-of-pole mounting structure with drawer for batteries and electronics, Presettable timer, Local or remote battery voltage measurement.



# Solar Module

## ETSolar Solar Module



### Features

- Low voltage-temperature coefficient enhances high-temperature operation
- Exceptional low-light performance and high sensitivity to light across the entire solar spectrum maximize yearly energy delivery
- 25-year limited warranty on power output, 2-year limited warranty on materials and workmanship

### Materials

- Highest quality, high-transmission tempered glass provides enhanced stiffness and impact resistance
- Advanced EVA encapsulation system with triple-layer back sheet meets the most stringent safety requirements for high-voltage operation
- A sturdy, anodized aluminum frame allows modules to be easily roof-mounted with a variety of standard mounting systems
- Ultra reliable bypass diodes prevent damage through overheating due to shaded or defective cells

### Benefits

- Manufactured in an ISO 9001:2000 certified plant
- High efficiency, high safety, high reliability
- Output power tolerance of +/-3%



Peak power: 70Wp - 280Wp - Cell typ: MonoCrystalline Silicon

# Solar Module

## Solar Module Bracket



Top of Pole mounting structure with battery box



- Structure in Inox steel
- Box with holes per areation
- Box with lateral opening

Top of Pole mounting structure without battery box



- Drawer for batteries and electronics
- Fixing for pole: diameter 102mm with blocking screws

# Lamp

## SOX Lamp



These lamps have a U-shaped discharge tube in an evacuated clear tubular outer bulb. Their luminous efficacy is extremely high and their colour is monochromatic yellow, with poor colour rendering. They use a ballast and an ignitor, a leak transformer or HF electronic gear.



Lamp	SOX-E 18	SOX-E 26	SOX-E 36	SOX-E 66
Output [lm]	1.800	3.600	6.100	10.500
Length [mm]	216	311	425	528
Diameter [mm]	52	52	52	68

## Lamp-Ballast



SOX18-36D is an electronic ballast designed for use with SOX-E low pressure sodium lamps, in high efficiency and energy saving applications. Power supplied by continuous low voltage [12Vdc] or [24Vdc], it has got an average conversion efficiency upper than 90% and more efficiency than 140%, in comparison with a standard electromagnetic ballast. Lamp drive is characterized by high frequency sine wave signal (low crest factor) for high efficiency lamp output, in terms of lumen per watt, and for greater lamp life. In case of reduced

energetic availability it is possible to have a flux reduction of the lamp with consequent energy saving up to 50%. For these reasons SOX18-36D is ideal in PV street-lamps for road lighting, as well as external places such as parks, gardens, parking places, considering the possibility of direct connection to solar equipments as: SPB-LB, SPB-LR and SPB-LG. The ballast small dimensions allow the installation in almost all the lamp-holders which are on the market and make it a highly versatile product.



### Technical features:

- 12/24Vdc power supply
- SOX-E or LED lamps
- SOX Lamp power: 18W-36W or 66W
- LED Lamp power: 20W, 24W, 30W
- High frequency drive
- Sine wave
- Average efficiency >90%
- Flux reduction -50%
- Protection for polarity inversion
- Deactivation in case of no lamp presence
- easy wiring
- Terminal block for cable until to 5mmq
- Small dimension

# Lamp

## Lamp Holder



### SOX lamp

- lamp holder for SOX E
- Bearing frame in polyester.
- Cage lamp IP 65
- IP 44 rest of the container
- Aluminium reflector
- Flat Glass

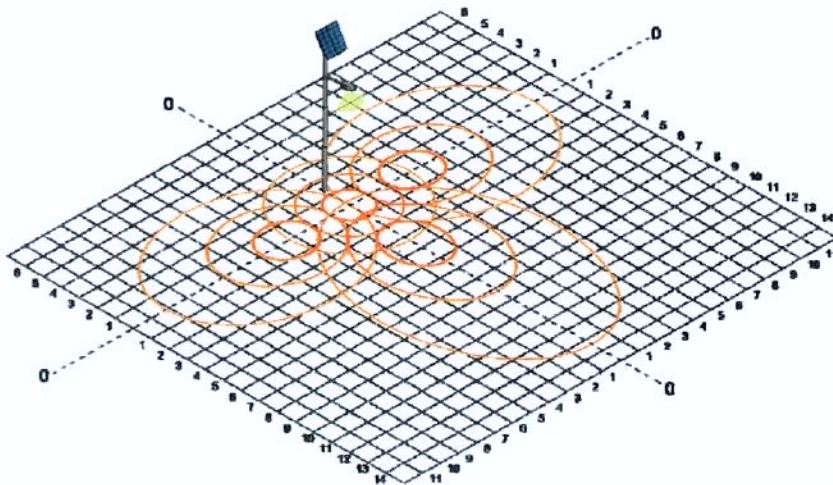


lamp holder for SOX-E 66; SOX-E 18; SOX-E 18-26; SOX-E 18-36

### LED lamp

- Total flux of lamp in 30 LEDs version = 3000 lm
- Lumen maintenance of greater than 70% after 50,000 hours
- Single Led light efficiency: 100 lm/Watt
- Total flux of lamp in 20 LEDs version = 2000 lm
- Total flux of lamp in 24 LEDs version = 2400 lm

Next development - efficiency increase of each LED: 120 lm/watt



## Lamp-Brackets



1. Galvanised lamp-bracket
  2. Galvanised double lamp-bracket
  3. Black-painted lamp-bracket
- Coupler included
  - Angle: 20°
  - Diameter: 60 mm

# Pole

## Lamp Holder



### Pole A

- Cylindrical galvanized
- 7 meters over ground (7,8 m total)
- Diameter at the bottom 168mm
- Diameter on the top 102mm

### Pole B

- Diameter of 102 mm
- Grey-painted cylindrical
- 3 meters over ground (3,5 m total)



# Charge Controller

## Charge Controller SPB-LB



- Easy cabling
- Recharge system for 12v (SPB-LB12) or 24v (SPBLB24) Pb batteries.
- Flooded lead acid/sealed Pb battery selectable type.
- Microcontroller system.
- Mosfet components.
- MPPT recharge.
- SMT technology.
- Max recharge current: 10A continuous.
- Max current from panels: 10A.
- Integrated blocking-diode.
- Integrated light sensor (with photovoltaic module).
- Activation: light sensor + timer + time-table programming
- Time-table programming can be set through switch.
- Load activation in "reduced flux" mode to save energy.
- Battery recharge with compensation in temperature.
- Control of remote battery voltage.
- Low battery control.
- Double voltage threshold of low battery and end of low battery condition, set through switch.
- Western Enhanced switching recharge system which improves modules' performances.
- Kind of battery (sealed or ad flooded lead acid) can be set through switch.
- LED for state indication of charge/batteries.
- Control LED for charge current.
- Over-temperature protection.
- Overload protection.
- PV module working nominal voltage: 12Vdc (SPBLB12) or 24Vdc (SPB-LB24).
- IP67 waterproof metal box for outdoor application.



# Charge Controller

## Charge Controller SPB-LR / SPB-LG



Monitoring by GSM remote control of the following functions

Monitoring by remote control (max 15 metres) of the following functions:

- Functions programming
- Monitoring of electrical parameters
- System check-up
- Troubleshooting detection
- Identification number given for each single equipment



GSM transmitter-receiver and a software control for a remote location



Radio Command for diagnostic Street-Lamp



# Battery & Cable

## Hoppecke power.com SB solar 12V 120



### Electrical Parameters

Nominal Voltage	12 V
Nominal Capacity C100	120 Ah
Nominal Capacity C10	100 Ah
Weight	38 kg
Dimensions (LxWxH)	334 x 177 x 230 mm



Or another Hoppecke battery (Range: 50 - 200 Ah)

### Cable Kit



- Cables for Temperatur Sensor
- Cables for PV modules
- Cables with terminals for batteries