

# Mini USB off-grid system complete solar energy supply

**With 10 W solar module SUSE 4.52, USB DC-DC converter SUSE 4.17, USB powerbank battery pack, USB radio SUSE 4.36, USB lighting with 8 white LEDs, USB measurement device for measuring the voltage, current, charge, electric vehicle SUSE SF6USB, short-time storage module SUSE 4.12 USB, solar motor SUSE 4.16USB and 2 USB cables**

Off-grid systems are photovoltaic units for an energy supply of buildings and technical units, that are not connected to the public power supply system. In Germany these off-grid systems are found for example in parking meters or on the highway for display panels or speed monitoring systems, in community gardens or on caravans. In many regions of Africa or Latin America, there are areas without a power supply grid, here PV off-grid systems are used as an energy supply for buildings, villages, facilities (e.g. cell phone towers).

Technically these systems usually are based on a 12V DC system, they consist of solar modules, charge controllers, 12V rechargeable batteries; we use the 5V DC system on a USB basis.

The mini **USB off-grid system** used by NILS-ISFH or SUNdidactics is based on the **5V/3,7V DC system** and uses the USB - micro USB charging technology applied internationally for smartphones and tablet PCs. All used devices use the well-known USB-A plugs and micro-USB plugs. These inexpensive installations can be used directly in practice, but they also conduce to the **photovoltaic education of students and teachers** with additional experimental exercises.

The **mini USB photovoltaic off-grid system** consists of a **10W solar module SUSE 4.52**, the charge controller with USB output SUSE 4.17, the powerbank battery pack, the radio SUSE 4.36 USB, a USB reading lamp with 8 white LEDs, the solar vehicle SF6USB, the USB measuring device, a short-time storage module SUSE 4.12USB, a solar motor with propeller SUSE 4.16USB, as well as 2 USB cables (1x USB-A to micro USB, 1x cable with 2x USB-A plugs). A cell phone, smartphone or tablet PC can be charged by solar power with this system. The powerbank battery pack or the smartphone have integrated charge controlling technology, so that the 3.7 V rechargeable battery is charged correctly. With this system, cell phones, smartphones, tablet PCs, and powerbank battery packs can be charged in the daytime in remote areas, at night the electric energy from the powerbank battery pack conduces to the electric power supply. Several systems are already in use in Africa.

With the solar module **SUSE 4.52** and the accessory devices, **photovoltaic experiments for the solar education of students and teachers** can be conducted with the help of extensive manuals.

## The components of the mini USB photovoltaic off-grid system:



**10W solar module SUSE 4.52**  
With LED + desk/ground positioner  
**Short-time storage device SUSE 4.12USB**



**Powerbank battery pack**  
(picture similar)

**Reading lamp SUSE 4.15USB**



**Solar motor SUSE 4.16USB**



**Solar vehicle SF6USB**



**Top: USB charge controller SUSE 4.17**

**Bottom: USB radio SUSE 4.36USB**



**USB measurement technology to measure voltage, current, charge**

**Scope of delivery:** 10W solar module SUSE 4.52, 1 powerbank battery pack 3,7 V/ 5V>5000 mAh, 1 USB reading lamp with 8 LEDs, 1 DC-DC converter SUSE 4.17M, 2 USB cables (USB to micro USB and USB-A to USB-A), 1 solar radio SUSE 4.36 USB, 1 USB measurement device, 1 solar vehicle SUSE SF6USB, 1 short-time storage device SUSE 4.12USB, 1 solar motor SUSE 4.16USB, extensive experimentation manuals and technical, solar didatic consultation service.

**Set price ready-to-use devices 199,95 €**