



innovative Solarsysteme für Schule und Ausbildung  
innovative solar- systems for school, college, technical education

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- solar cells
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- solar- experiment- manuals
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- solar consulting
- solar education
- solar training for teachers
- solar toys

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## Mini USB photovoltaic off-grid system

2 solar modules SUSE 4.51 with smartphone charge controller SUSE 4.17,  
Powerbank rechargeable battery 3.7 V, radio SUSE 4.36USB, LED reading lamp

**Off-grid systems** are photovoltaic installations for the power supply of buildings and technical objects, that lack a grid connection. In Germany these off-grid systems are found for example in parking meters or on highways for displays or speedometers, in garden plots or on RVs. In many regions of Africa or Latin America areas without electric supply network exist, here PV off-grid systems conduce to the power supply of buildings, villages, installations (e.g. cell phone towers).

Technically these facilities are generally based on the 12 V DC system, they consist of solar modules, charge controller, 12 V rechargeable batteries.

The **mini USB photovoltaic off-grid system** used by NILS-ISFH or SUNdidactics is based on the **5 V / 3.7 V DC system** and uses the USB - micro USB charging technology applied worldwide for smartphones and tablet PCs. All used devices use the 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 2 5W solar modules SUSE 4.51, the charge controller with USB output SUSE 4.17, the powerbank rechargeable battery, the radio SUSE 4.36 USB, and a USB reading lamp with 8 white LEDs. A cell phone, smartphone or tablet PC can be charged by solar power with this system. The powerbank rechargeable battery or the smartphone has integrated charge controlling technology, so that the 3.7 V rechargeable battery is charged correctly. For experiments to educate students or train teachers the system includes exercise sheets as well as a multimeter and 2 lab wires. With this installation cell phones, smartphones, tablet PCs, and Powerbank rechargeable batteries can be charged in the daytime in remote areas, at night the electric energy from the Powerbank rechargeable battery conduces to the electric power supply. Several systems are already in use in Africa.

With the two solar modules SUSE 4.51 and extensive manuals **photovoltaic experiments for the solar education of students and teachers can be conducted.**

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



Solar module SUSE 4.51with Multimeter (similar to ill.) Powerbank recharg. battery (similar to illustration) USB reading lamp (similar to ill.) top: USB charge controller SUSE 4.17 bottom: USB radio SUSE 4.36-USB

**Scope of delivery:** 2 5W solar modules SUSE 4.51, 1 Powerbank rechargeable battery 3.7 V/ 10 000 mAh, 1 USB reading lamp with 8 LEDs, 1 charge controller SUSE 4.17, 1 USB cable (USB to micro USB), 1 solar radio SUSE 4.36 USB, 1 multimeter, 2 lab wires 1x red + 1x black 0,5 m, extensive experimentation manuals.